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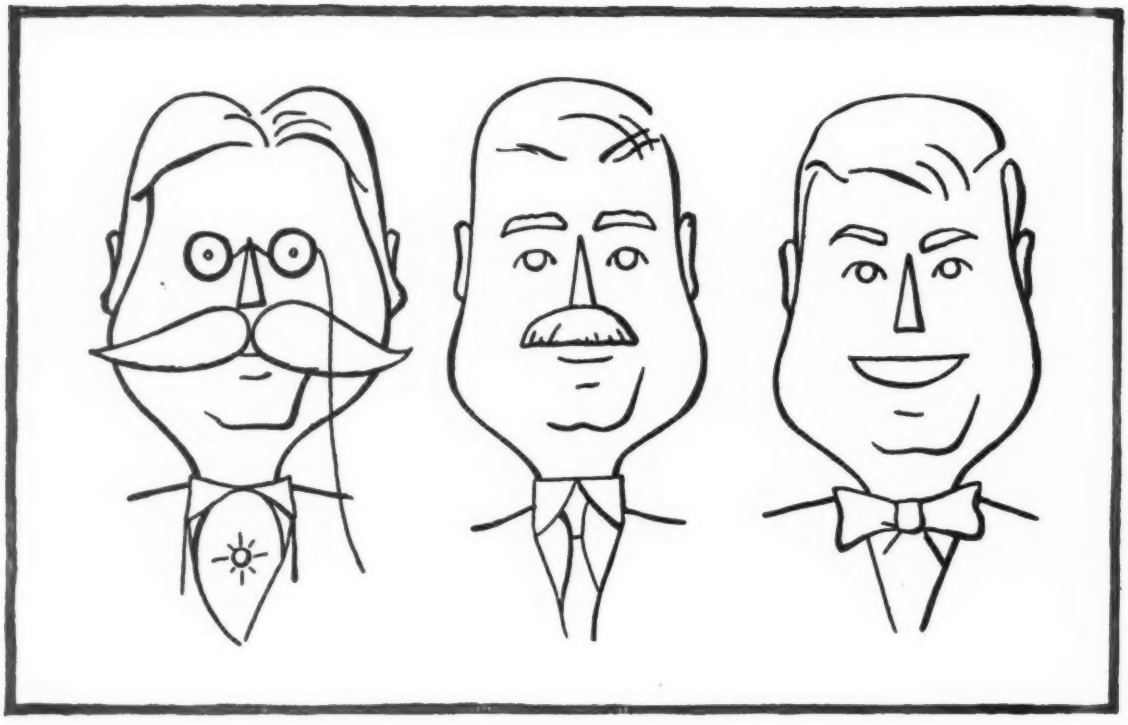

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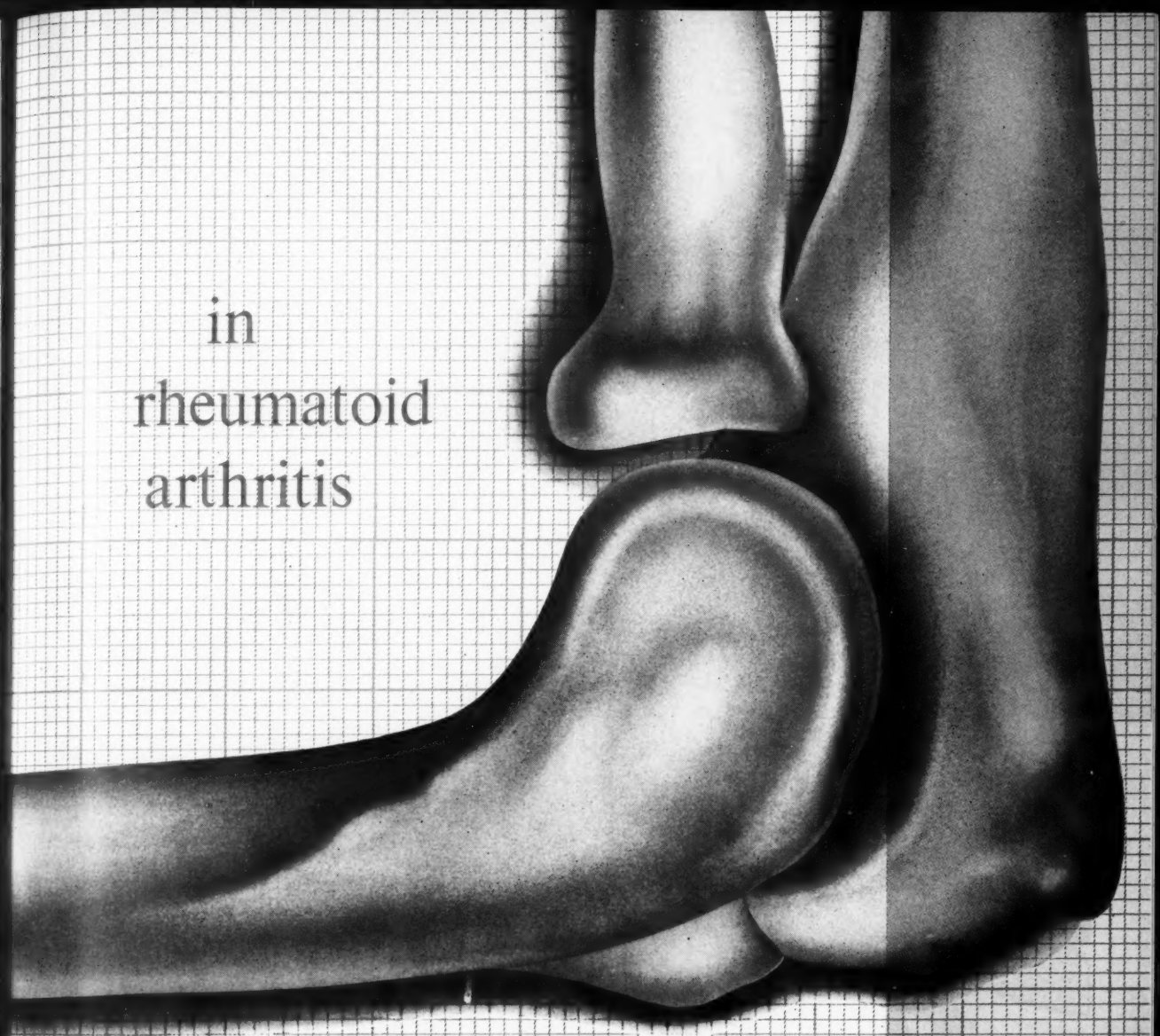

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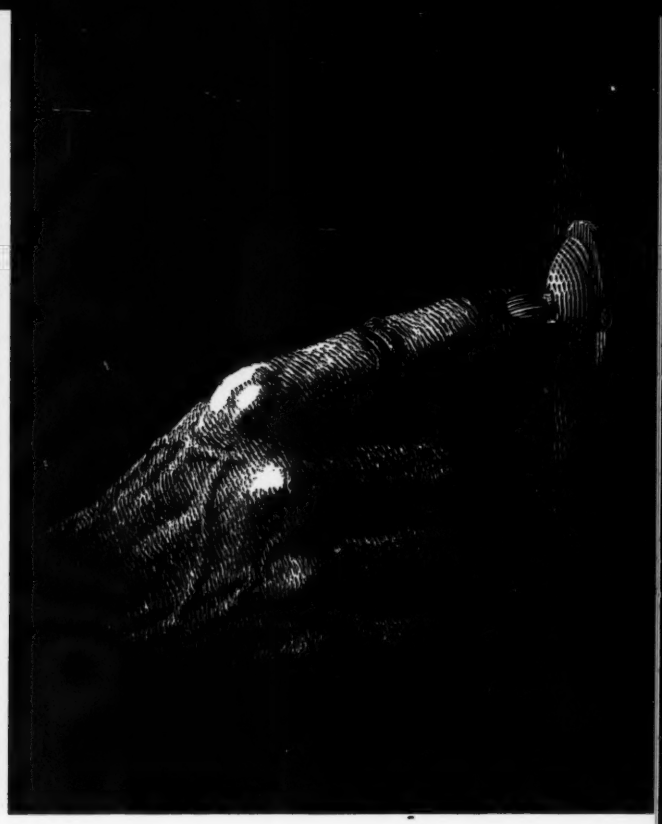

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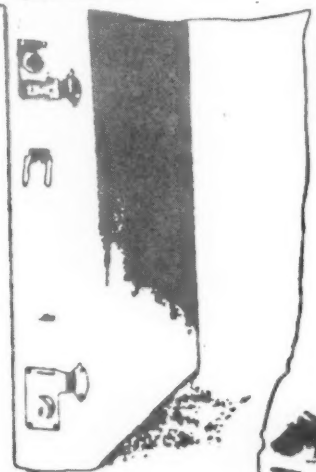

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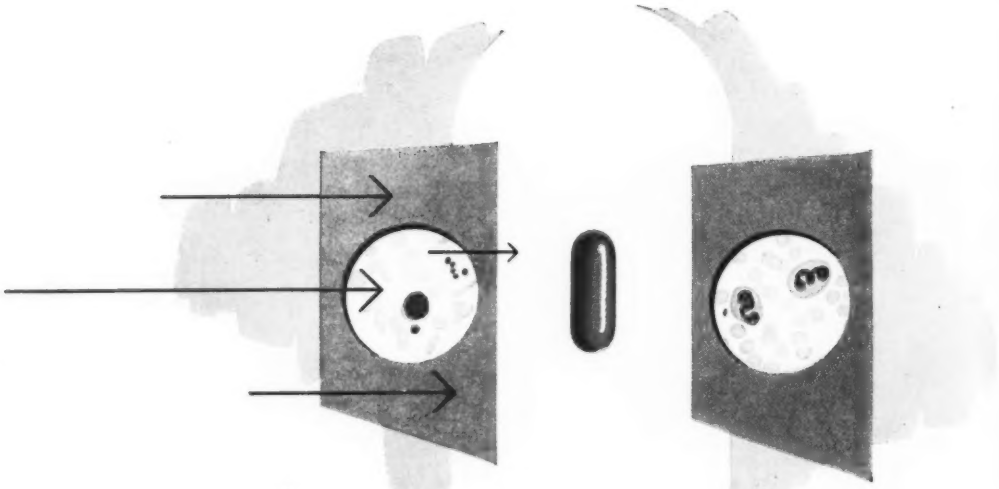

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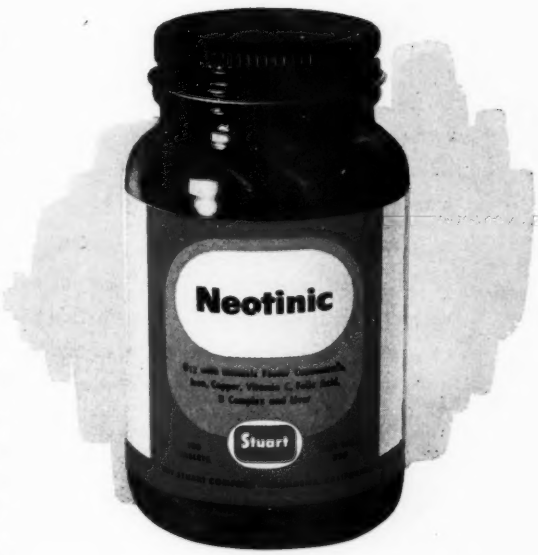

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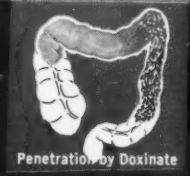

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1. Wilson, J. L., and Dickinson, D. G.: J.A.M.A. *158*:261 (May 28) 1955.

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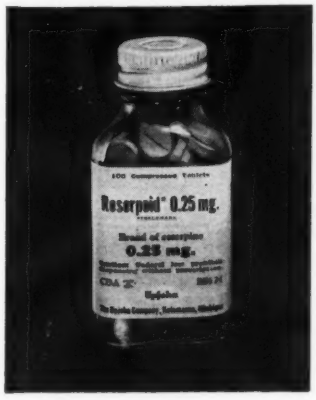

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(1) Smith, P. T., Kiser, R. N., Peck, W. F., and Thompson, J. R.: J.A.M.A. 160:745 (Mar. 3) 1956. (2) Ainsley, S. J.: J.A.M.A. 160:747 (Mar. 3) 1956. (3) Abrahamsen, E. H., and Baird, H. W., III: J.A.M.A. 160:749 (Mar. 3) 1956. (4) Rodriguez-Gomez, M., Valdes-Rodriguez, A., and Drew, A. L.: J.A.M.A. 160:752 (Mar. 3) 1956.

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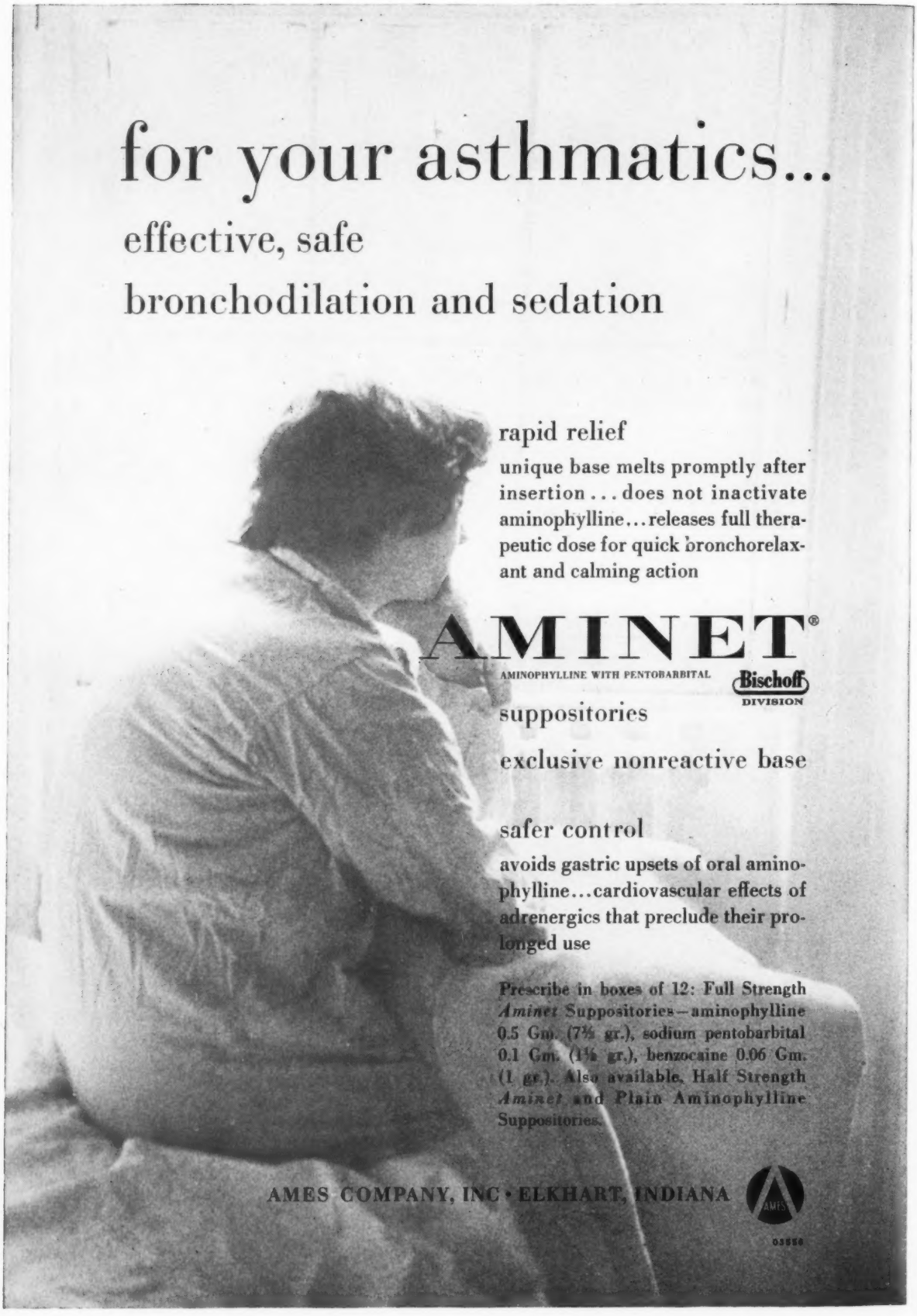
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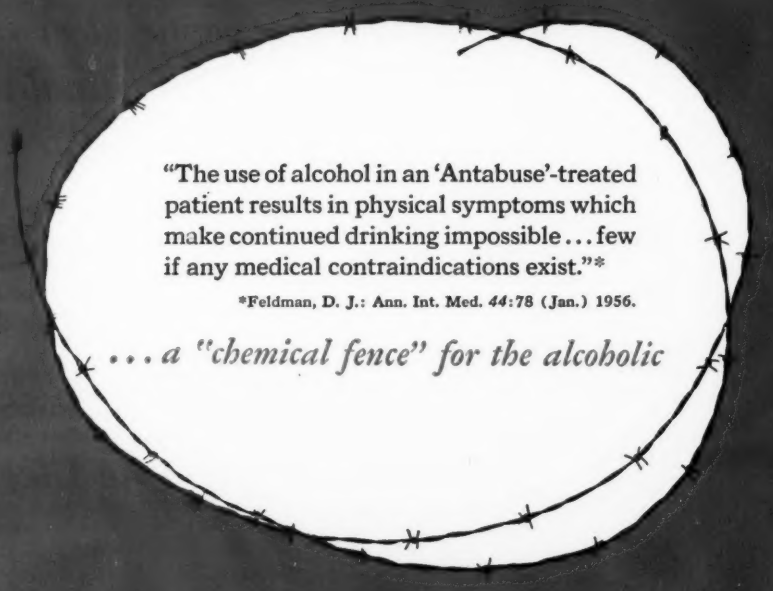

"The use of alcohol in an 'Antabuse'-treated patient results in physical symptoms which make continued drinking impossible ... few if any medical contraindications exist."*
*Feldman, D. J.: Ann. Int. Med. 44:78 (Jan.) 1956.
... a "chemical fence" for the alcoholic

A brochure giving full details of therapy will be sent to physicians upon request.

"ANTABUSE" is supplied in 0.5 Gm. tablets (scored), bottles of 50 and 1,000.

AYERST LABORATORIES • New York, N. Y. • Montreal, Canada

5654

MONODRAL® with MEBARAL®

for peptic ulcer • gastro-intestinal tension and irritability

An exclusive combination designed to relieve pain, reduce tension and promote healing through effective inhibitory central and vagal-parasympathetic actions influencing all known etiologic factors in peptic ulcer.

anticholinergic • sedative

with unusually high antisecretory action • dependable antispasmodic effect • no drowsiness

Isolates the Ulcer

Each tablet contains:

MONODRAL* bromide..... 5 mg.
MEBARAL**.....32 mg.

Dosage: 1 or 2 tablets three or four times daily. *Available* on prescription only. Bottles of 100 tablets.

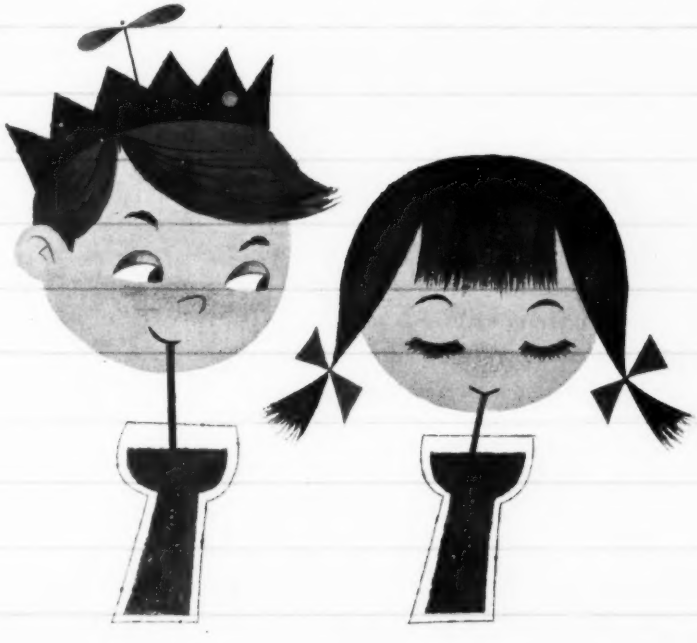
Winthrop LABORATORIES
New York 18, N.Y. • Windsor, Ont.

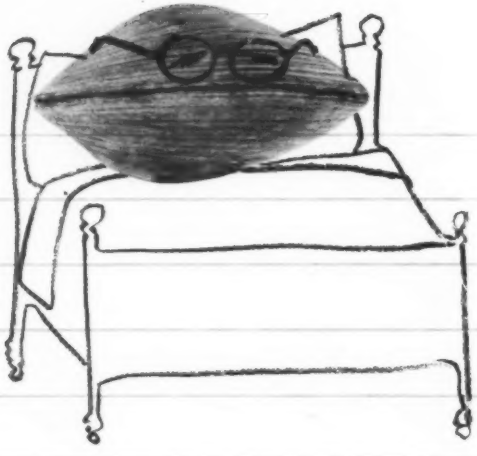
*Controls hyperacidity and hypermotility
**Sedates without drowsiness
Monodral (brand of penthienate) and Mebaral (brand of mephobarbital), trademarks reg. U.S. Pat. Off.

It's a date—

...among other things...which distinguishes Vi-Penta Drops 'Roche.' Since all multivitamin solutions tend to lose strength in time, Vi-Penta® Drops are dated to assure full label potency. Just 0.6 cc daily provides required amounts of A, C, D and B vitamins (including B_6), and you'll find that both mothers and youngsters like them because they're easy to give and easy to take.

Hoffmann - La Roche Inc • Nutley 10 • N. J.





How many of your patients are clams?

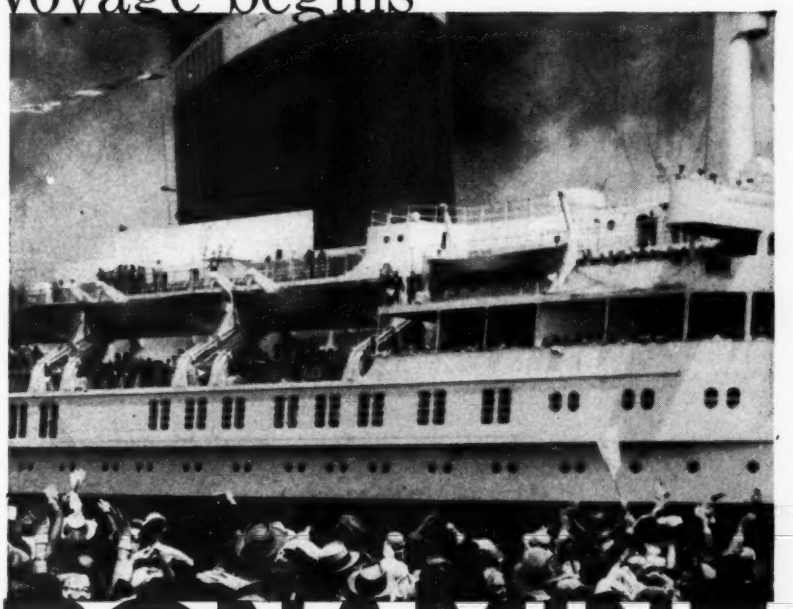
... most youngsters to be sure -
and many oldsters, too - who balk at pills.

Gantrisin (acetyl) Pediatric Suspension solves the problem because its delicious raspberry flavor appeals to all ages, while the wide spectrum and extensive clinical background of Gantrisin assure you of effective, well-tolerated antibacterial therapy.

Gantrisin® - brand of sulfisoxazole
Gantrisin®(acetyl) - brand of acetyl sulfisoxazole

ROCHE Original Research in Medicine and Chemistry

Bon Voyage begins



with BONAMINE*

BRAND OF MECLIZINE HYDROCHLORIDE

longest-acting motion-sickness remedy[1] ➔ effective in low dosage ➔ controls various symptoms of motion sensitivity in minutes ➔ one dose often prevents motion sickness for 24 hours ➔ as safe as a placebo[1] ➔ BONAMINE TABLETS, *scored, tasteless, 25 mg.* ➔ BONAMINE CHEWING TABLETS, *pleasantly mint flavored, 25 mg.*

1. Report of Study by Army, Navy, Air Force Motion Sickness Team: J.A.M.A. *160*:755 (March 3) 1956. *Trademark

Pfizer PFIZER LABORATORIES, *Division, Chas. Pfizer & Co., Inc.,* Brooklyn 6, N. Y.

for petit mal epilepsy

a drug of choice in initiating treatment[1]

MILONTIN®

Kapseals® and Suspension

(methylphenylsuccinimide, Parke-Davis)

Specifically valuable for control of petit mal attacks... of definite help in some patients with psychomotor seizures[1-5]... often effective in patients refractory to other therapy[4-6]... with few mild side effects[1-6]... *and after five years of study, found least toxic of all effective drugs.*[1]

In patients with mixed grand mal–petit mal epilepsy, its compatibility permits use of MILONTIN with Dilantin® Sodium (diphenylhydantoin sodium, Parke-Davis) or with Dilantin Sodium with Phenobarbital.

MILONTIN Kapseals, 0.5 Gm., bottles of 100 and 1,000; also available as MILONTIN Suspension (250 mg. per 4-cc. tsp.) in 16-ounce bottles. Detailed information available upon request, or from your Parke-Davis representative.

(1) Zimmerman, F. T.: *New York J. Med.* 55:2338, 1955. (2) Carter, C. H.: *Neurology* 4:935, 1954. (3) Forrer, G. R.: *J. Michigan M. Soc.* 53:275, 1954. (4) Smith, B., & Forster, F. M.: *M. Ann. District of Columbia* 22:279, 1953. (5) Lemere, F.: *Northwest Med.* 53:482, 1954. (6) Davidson, D. T., Jr.: Lombroso, C., & Markham, C. H.: *New England J. Med.* 253:173, 1955.

PARKE, DAVIS & COMPANY DETROIT, MICHIGAN

83086

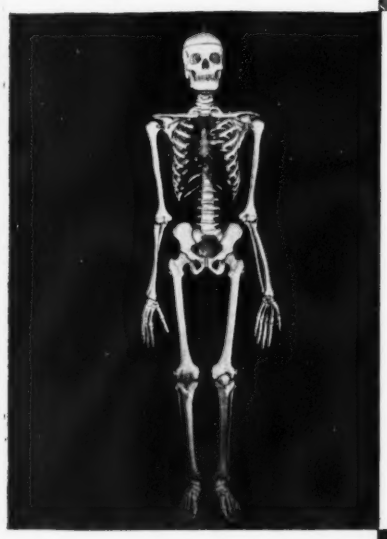
MEDICAMENTA VERA

For Study, Teaching and Demonstration

A Complete Line of Anatomical Models, Skeletons and Skulls

SKELETONS—First quality specimens carefully selected and prepared in our workrooms to meet the highest standards...mounted in normal posture with natural articulations...$235; with painted muscle origins and insertions...$385.

SKULLS—Ranging from "extra" to "student" quality...all with hinged jaws, cut calvaria; full or partial dentition depending on quality. Children's, fetal and disarticulated skulls also available. Extra quality skulls... $60; first quality...$55; good quality...$50; student quality ...$30-45. Dissectible demonstration skull...$115.



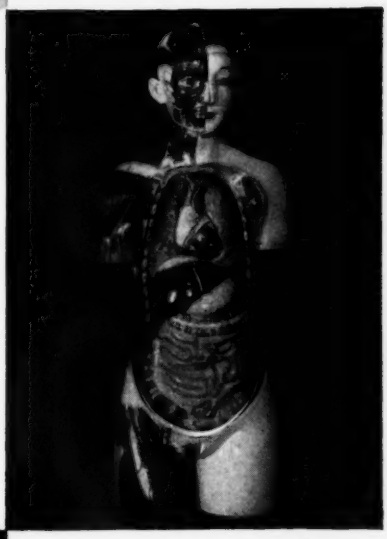
PLASTIC REPRODUCTIONS ALSO AVAILABLE

—ideal where cost is a factor

Clay-Adams plastic reproductions are made of durable, break-resistant polyester resin, virtually indistinguishable from natural bone.

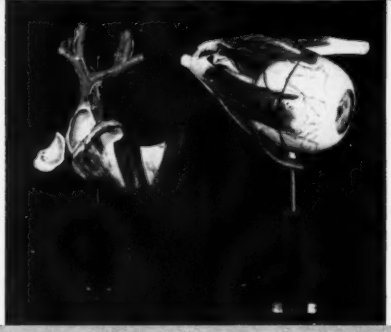
The following reproductions are available for immediate delivery at all times:

Adult Human Skeleton	$195
Human Muscular Skeleton	$265
Adult Skull, first quality	$45
Vertebral Column	$50
Pelvis (male)	$40
Herniated Disc	$40



"DURABLE" Anatomical Models—Completely dissectible female torso shows over 500 anatomical structures; made of colored, lightweight, laminated paper; 44" high; washable... $350; male or female full figures...$600.

"DURABLE" Heart; Eye—The heart shows detailed internal structure...$45; other heart models, $55 and $38. The eye shows major nerves and blood vessels and the eyeball is dissectible...$30. Write for literature on other "DURABLE" models.



Remember These Other Clay-Adams Teaching Aids:
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Descriptive literature on our complete line of skulls, skeletons and other visual aids is available upon request.

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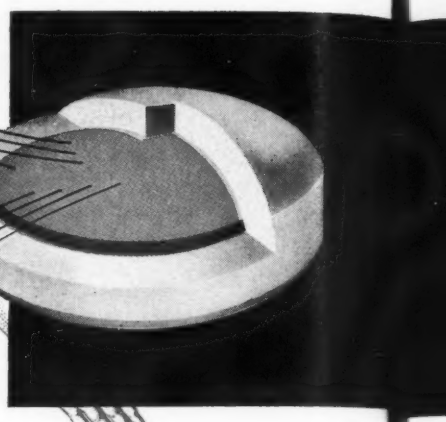


Multiple Compressed Tablets 'Co-Deltra' and 'Co-Hydeltra' are unique among the dosage forms of the newer steroids, because they are specifically designed as a tablet within a tablet to provide stability and to release in sequence, antacid and anti-inflammatory agents . . .

1. the outer layer of antacids (aluminum hydroxide gel and magnesium trisilicate) comes into contact with the gastric mucosa first . . . and after it is completely dissolved . . .

2. *the hitherto intact inner core* containing the anti-inflammatory agent (either prednisone or prednisolone) then begins to release its full therapeutic potential . . . and not before.

NEW

Multiple Compressed Tablets

'Co-Deltra'

Prednisone Buffered

benefits of prednisone and prednisolone plus positive antacid action to minimize gastric distress...

A reportedly higher incidence of gastric distress in patients receiving the newer steroids prednisone and prednisolone indicates the desirability of co-administering non-systemic antacids.[1]

To help the physician cope with this problem of gastric distress which might otherwise become an obstacle to therapy with the newer steroids . . . Multiple Compressed Tablets 'Co-Deltra' (Prednisone Buffered) and 'Co-Hydeltra' (Prednisolone Buffered) are now available.

'Co-Deltra' and 'Co-Hydeltra' are now available in bottles of 30 on your prescription. Each Multiple Compressed Tablet contains:

Prednisone or Prednisolone, 5 mg.; 300 mg. of dried aluminum hydroxide gel, U.S.P., and 50 mg. of magnesium trisilicate.

'Co-Deltra' and 'Co-Hydeltra' are trade-marks of Merck & Co., Inc.

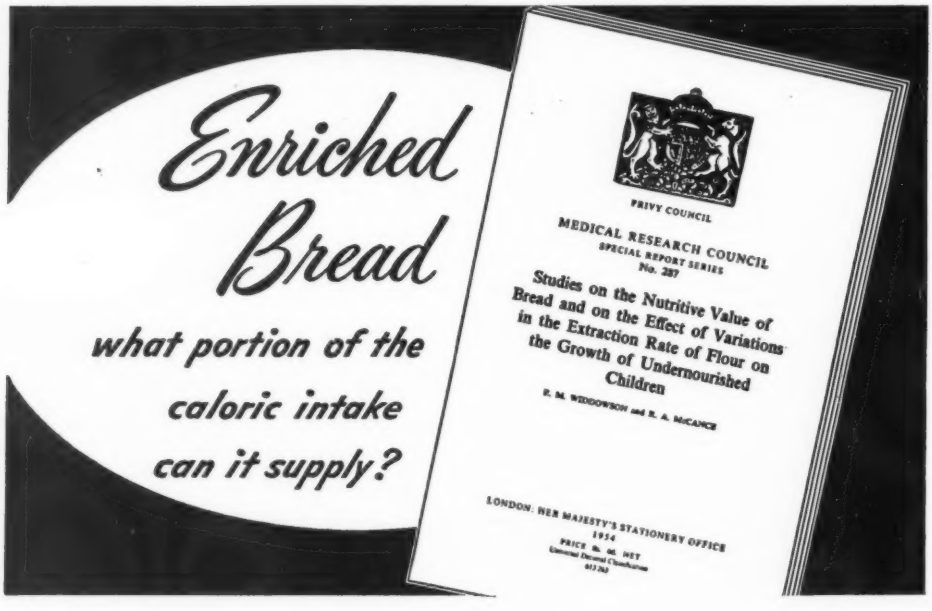
1. Bollet, A. J., Black, R., and Bunim, J. J.: *J.A.M.A.* **158**: 459, June 11. 1955.

'Co-Hydeltra'

Prednisolone Buffered

SHARP & DOHME

Philadelphia 1, Pa.
Division of Merck & Co., Inc.


Enriched Bread
what portion of the caloric intake can it supply?
PRIVY COUNCIL
MEDICAL RESEARCH COUNCIL
SPECIAL REPORT SERIES
No. 287
Studies on the Nutritive Value of Bread and on the Effect of Variations in the Extraction Rate of Flour on the Growth of Undernourished Children
E. M. WIDDOWSON and R. A. McCANCE
LONDON: HER MAJESTY'S STATIONERY OFFICE
1954

A striking observation was made in a recently reported nutrition study. Undernourished children in a German orphanage, placed on diets providing a high percentage of their total calories in the form of bread, not only improved in health, but "in spite of the simple diet provided" gained in weight and increased in height at a highly satisfactory rate.*

The children received daily supplements of vitamin A, 2000 I.U., vitamin D, 1000 I.U., and ascorbic acid, 25 mg.

In the words of the investigators: "One of the most striking findings, . . . and perhaps the most unexpected one, was the remarkable way in which the general condition of all the children . . . improved . . ."

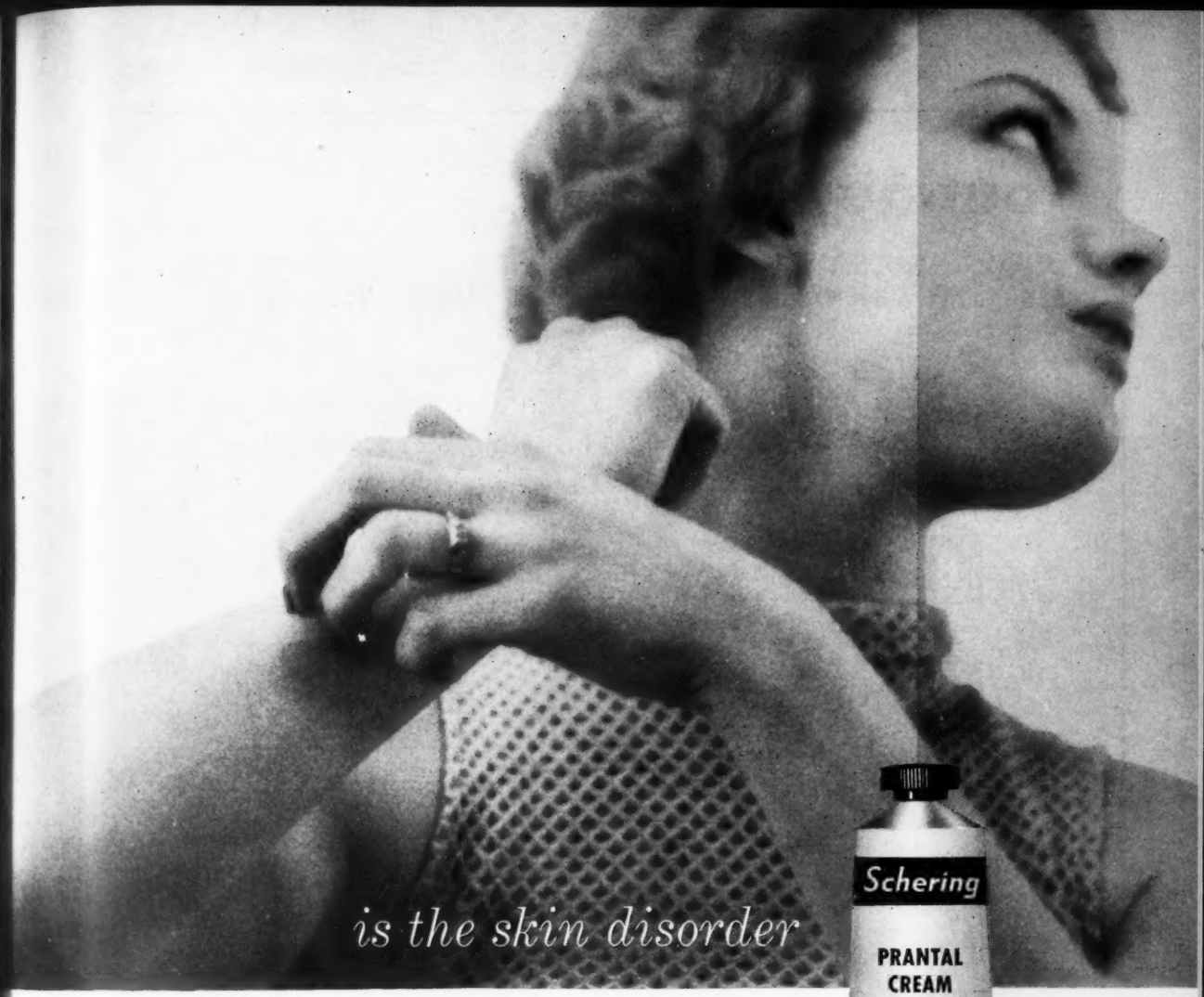
"Probably the most important finding concerns the high nutritive value of wheat in any of the forms customarily consumed by man. . . . [The diets fed] provided undernourished children aged 5-15 years with all the nutrients required for a high rate of growth and development for a period of 18 months."

Enriched bread, made from 70 per cent extraction flour and very similar to enriched bread sold in the United States, was among the breads used. While the diets used in this study are not justified in this country with its abundant food supply, hence do not merit consideration for applicability here, they nevertheless serve to emphasize again the high nutritional value of enriched bread.

*Widdowson, E. M., and McCance, R. A.: Studies on the Nutritive Value of Bread and on the Effect of Variations in the Extraction Rate of Flour on the Growth of Undernourished Children, Medical Research Council, Special Report Series, No. 287, London, Her Majesty's Stationery Office, 1954.

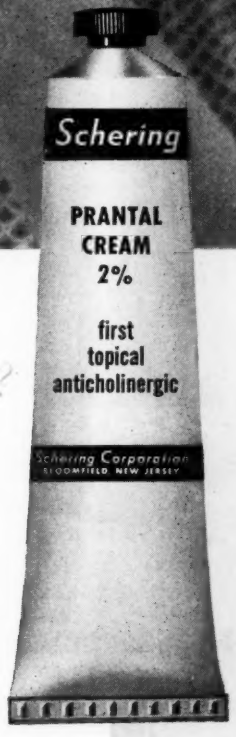
The nutritional statements made in this advertisement have been reviewed by the Council on Foods and Nutrition of the American Medical Association and found consistent with current authoritative medical opinion.

AMERICAN BAKERS ASSOCIATION 20 North Wacker Drive • Chicago 6, Illinois



is the skin disorder

aggravated by sweating,
itching, scratching?
marked by weeping lesions?



direct control and quick relief

- **antipruritic effect often in a few minutes**
- **inhibits sweating...dries oozing lesions**
- **promotes more rapid healing**

valuable **in contact and poison ivy dermatitis, weeping dermatoses, atopic eczema, dyshidrotic eczema, neurodermatitis and localized hyperhidrosis.**

PRANTAL® Methylsulfate Cream, economical 50 Gm. tube, each gram containing 20 mg. of diphemanil methylsulfate.

PL-J-51

routine

in the six-week postpartum checkup

A GENERAL PHYSICAL, including blood and urine

B THOROUGH PELVIC EXAMINATION

C CONTRACEPTIVE COUNSEL

THE SPERMICIDAL GEL WITH BUILT-IN BARRIER

Ortho

why is this woman tired?

Because she is mentally "done in". Many of your patients—particularly housewives—are crushed under a load of dull, routine duties that leave them in a state of mental and emotional fatigue. For these patients, you may find 'Dexedrine' an ideal prescription. 'Dexedrine' will give them a feeling of energy and well-being, renewing their interest in life and living. Dexedrine* (dextro-amphetamine sulfate, S.K.F.) is available as tablets, elixir, and Spansule* capsules (sustained release capsules, S.K.F.) and is manufactured by Smith, Kline & French Laboratories, Philadelphia.

*T.M. Reg. U.S. Pat. Off. Patent Applied For

Erythrocin in the treatment of pharyngitis*

9/12/55 **DISCHARGE SUMMARY**

Patient, male, age 40, entered hospital with history of sore throat starting 48 hours previous to admission.

Physical examination revealed throat to be infected and red with severe hyperplasia of lymphoid tissues. Throat culture revealed Group A beta hemolytic streptococcus.

Patient was started on 200 mg. of Erythrocin four times a day for three days. Subjective and objective improvement within 48 hours. No side effects. Three cultures taken subsequently did not show Group A beta hemolytic streptococcus.

Final Diagnosis: acute streptococcal pharyngitis.

Result: rapid and complete recovery with Erythrocin.

*Communication to Abbott Laboratories

specific against coccic infections

Specific—because you can actually pinpoint the therapy for coccic infections. That's because you know most bacterial respiratory infections are caused by staph-, strep- and pneumococci. And these are the very organisms most sensitive to ERYTHROCIN—even when they resist penicillin and other antibiotics.

filmtab®

Erythrocin®

(Erythromycin Stearate, Abbott)

STEARATE

with little risk of side effects

Low toxicity—because ERYTHROCIN (in contrast to many other antibiotics) rarely alters intestinal flora. Thus, patients seldom get gastroenteral side effects. Or loss of vitamin synthesis in the intestine. No allergic reactions, either. *Filmtab* ERYTHROCIN Stearate (100 and 250 mg.), bottles of 25 and 100. Abbott

filmtab®

Erythrocin®

(Erythromycin Stearate, Abbott)

STEARATE

® Filmtab — film-sealed tablets; pat. applied for.

605169

In Congestive Heart Failure
R_x 'Wide Safety Margin'
GITALIGIN®

WHITE'S BRAND OF AMORPHOUS GITALIN

Authoritative investigators have reported that the digitalizing dose of Gitaligin is approximately one-third the toxic dose.[1-5]

This "wide margin of safety" (difference between therapeutic and toxic doses) permits rapid digitalization and successful maintenance with a minimum of toxic side reactions—even in refractory cases where other glycosides have failed.[6] And, cost to your patient is no greater than ordinary digitalis preparations.

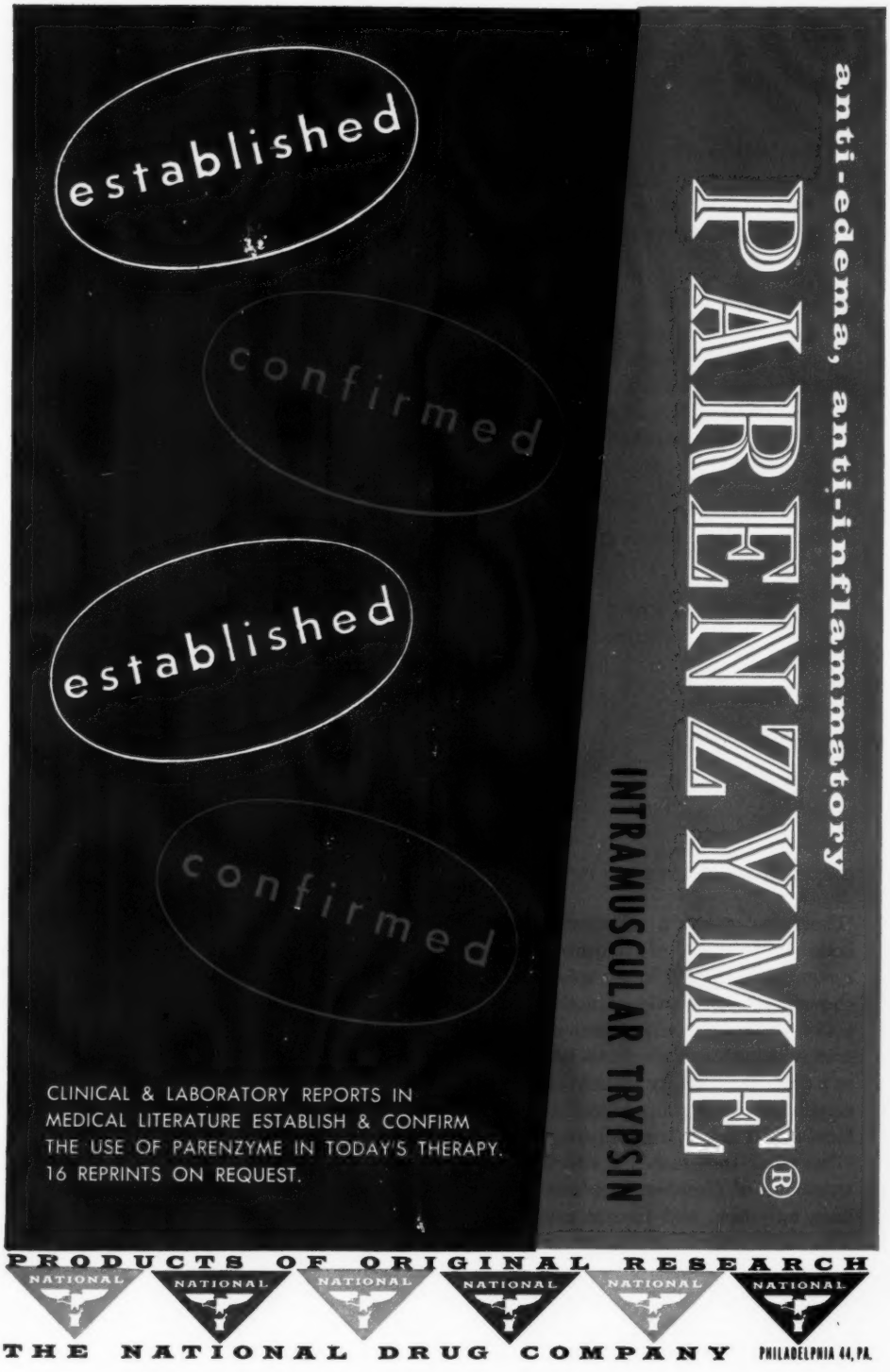
Supplied: Scored tablets of 0.5 mg. Bottles of 30 and 100.

References: 1. Ehrlich, J. C.: Arizona Med. *12:* 239 (June) 1955. 2. Weiss, A., and Steigmann, F.: Am. J. M. Sc. *227:* 188 (Feb.) 1954. 3. Dimitroff, S. P.; Griffith, G. C.; Thorner, M. C., and Walker, J.: Ann. Int. Med. *39:* 1189 (Dec.) 1953. 4. Hejtmancik, M. R., and Herrmann, G. R.: Texas St. J. M. *51:* 238 (May) 1955. 5. Batterman, R. C.; DeGraff, A. C., and Rose, O. A.: Circulation *5:* 201 (Feb.) 1952. 6. Denham, R. M.: J. Kentucky St. M. Assoc. *53:* 209 (Mar.) 1955.

It's so easy to switch to 'wide safety margin' Gitaligin. Follow these simple dosage equivalents wherever digitalis therapy is indicated.

DIGITALIS PREPARATION	AVERAGE DAILY MAINTENANCE DOSE	GITALIGIN DOSAGE EQUIVALENT (APPROX.)
Digitalis leaf	0.1 Gm.	0.5 mg.
Digitoxin	0.1 mg.	0.5 mg.
Digoxin	0.5 mg.	0.5 mg.

WHITE LABORATORIES, INC. Kenilworth, N. J.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anti-edema, anti-inflammatory
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INTRAMUSCULAR TRYPSIN
CLINICAL & LABORATORY REPORTS IN
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THE USE OF PARENZYME IN TODAY'S THERAPY.
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PRODUCTS OF ORIGINAL RESEARCH
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PHILADELPHIA 44, PA.

announcing

THORA-DEX*

a balanced combination of

Thorazine† and Dexedrine‡

'Thorazine':
a specific anti-anxiety agent.

'Thorazine' exerts a selective inhibiting action on functions of the central nervous system, particularly in the sphere of psychomotor and emotional activity. This action promptly produces a new and unique tranquilizing effect which can be described as a detached serenity without clouding of consciousness or impairment of mental faculties. It is this tranquilizing action of 'Thorazine' that makes it effective in the treatment of disorders in which anxiousness, agitation, and tension are present.

'Dexedrine':
a standard antidepressant.

'Dexedrine' has long been recognized as an outstanding antidepressant for elevation of mood in mild depressive states. The symptoms may include vague pains and disorders without apparent organic cause; fatigue; lessened initiative and accessibility; despondency and worry; and a negative attitude towards the world.

★Trademark
†T.M. Reg. U.S. Pat. Off. for chlorpromazine, S.K.F.
‡T.M. Reg. U.S. Pat. Off. for dextro-amphetamine sulfate, S.K.F.

Indications:

In mental and emotional disturbances: **'Thora-Dex' is indicated in a wide variety of mental and emotional disturbances marked by anxiety, agitation, apprehension and depression.**

In somatic conditions complicated by emotional stress: **'Thora-Dex' is of value in many somatic conditions, apparently unrelated, but in which emotional stress is a complicating or even a causative factor. With tension, apprehension, anxiety and depression allayed, the clinical picture and prognosis are greatly improved in many somatic conditions.**

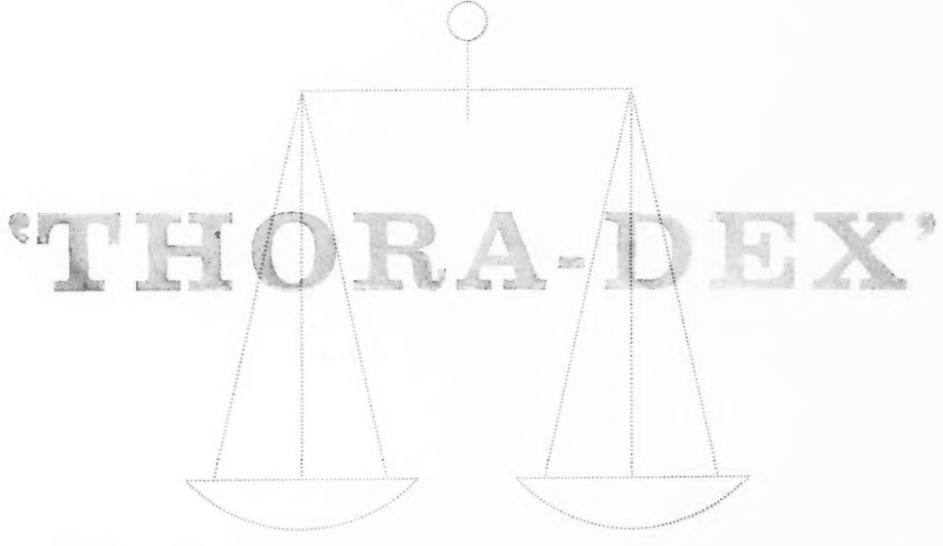
When 'Thorazine' alone causes undesired drowsiness: **'Thorazine' alone sometimes causes drowsiness; while this effect may be desirable in some patients, it may prove troublesome in others. The patient treated with 'Thora-Dex' is generally more alert and assured, with normal interest, activity and capacity for work. For instance, in the treatment of *nausea and vomiting*, especially in ambulatory cases where drowsiness is a problem, 'Thora-Dex' will be found widely useful.**

Formula:

'Thora-Dex' Tablets are available in two strengths: 'Thorazine', 10 mg., and 'Dexedrine', 2 mg.; 'Thorazine', 25 mg., and 'Dexedrine', 5 mg.

'Thora-Dex' should be administered discriminately and, before prescribing, the physician should be fully conversant with the available literature on 'Thorazine'.

Smith, Kline & French Laboratories, Philadelphia



The Spectrum of Nutrients in Oatmeal

The important contribution to daily nutritional health made by the broad spectrum of nutrients in the classical Quaker Oats breakfast dish is illustrated by this table. All the nutrients in oatmeal occur naturally.

THE QUAKER OATS BREAKFAST DISH*

NUTRIENT	OATMEAL	MILK	TOTAL	NUTRIENT	OATMEAL	MILK	TOTAL
†Protein	4.7 Gm.	3.9 Gm.	8.6 Gm.	†Iron	1.28 mg.	0.12 mg.	1.40 mg.
Carbohydrate	17.7 Gm.	5.7 Gm.	23.4 Gm.	†Calcium	15 mg.	148 mg.	163 mg.
Fat	2.0 Gm.	4.4 Gm.	6.4 Gm.	†Phosphorus	115 mg.	113 mg.	228 mg.
†Thiamine	0.18 mg.	0.05 mg.	0.23 mg.	Potassium	162 mg.	163 mg.	325 mg.
†Niacin	0.26 mg.	0.10 mg.	0.36 mg.	Zinc	1.08 mg.	0.45 mg.	1.53 mg.
†Riboflavin	0.05 mg.	0.19 mg.	0.24 mg.	†Folic acid	11.4 mcg.	0.3 mcg.	11.7 mcg.
†Pyridoxine	0.07 mg.	0.06 mg.	0.13 mg.	Vitamin B_{12}	0.1 mcg.	0.7 mcg.	0.8 mcg.
Pantothenic acid	0.25 mg.	0.41 mg.	0.66 mg.	†Copper	0.31 mg.	0.04 mg.	0.35 mg.
†Vitamin A plus Carotenoids	—	0.08 mg.	0.08 mg.	Manganese	1.45 mg.	0.002 mg.	1.45 mg.
Magnesium	51 mg.	14 mg.	65 mg.	†Calories	111	81	192

*1 oz. oatmeal (dry), 4 oz. whole milk; usually-added sugar not included in evaluation; sources supplied on request.

†Nutrients for which Daily Dietary Allowances are recommended by the National Research Council.

Quaker Oats and Mother's Oats, the two brands of oatmeal marketed by The Quaker Oats Company, are identical in their content of all nutrients. Both brands are available in the Quick (cooks in one minute) and the Old-Fashioned (cooks in five minutes) varieties.

Few foods can better the broad nutrient spectrum of the oatmeal serving. For its caloric content its nutritional contribution may well be unique, and justifies the physician's continued recommendation of "an oatmeal breakfast" for every age, for the normal as well as the therapeutically indicated diet.

The Quaker Oats Company
CHICAGO

NOW—EFFECTIVE STEROID HORMONE THERAPY OF RHEUMATIC AFFECTIONS WITH GREATER SAFETY AND ECONOMY

PABALATE-HC

Robins

Pabalate with Hydrocortisone

Clinical evidence indicates that, in Pabalate-HC, the synergistic antirheumatoid effects of hydrocortisone, salicylate, para-aminobenzoate, and ascorbic acid achieve satisfactory remission of symptoms in *up to 85% of cases studied*

—*with a much higher degree of safety*

—*even when therapy is maintained for long periods*

—*at significant economy for the patient*

Each tablet of Pabalate-HC contains 2.5 mg. of hydrocortisone—50% more potent than cortisone, yet not more toxic.

FORMULA

In each tablet:

Hydrocortisone (alcohol)	2.5 mg.
Potassium salicylate	0.3 Gm.
Potassium para-aminobenzoate	0.3 Gm.
Ascorbic acid	50.0 mg.

DOSAGE: Two tablets four times daily. Additional information on request.

AVAILABLE FOR YOUR PRESCRIPTION **NOW**

A. H. ROBINS CO., INC. RICHMOND 20, VIRGINIA

Ethical Pharmaceuticals of Merit since 1878

Reduces Muscular Tension

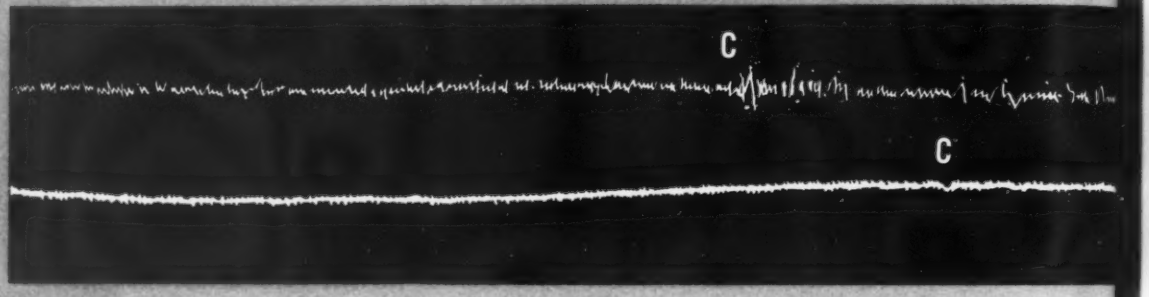
Equanil®

MEPROBAMATE

(2-methyl-2-n-propyl-1,3-propanediol dicarbamate)

Licensed under U.S. Patent No. 2,724,720

Electromyography shows decisive response



Electromyographic study of neuromuscular hyperactivity in 42-year-old male with anxiety-tension syndrome. A, Before EQUANIL; action potential of high amplitude and frequency. B, After one week of ambulatory treatment with EQUANIL; showing definite reduction in tension, greater ability to relax, and marked improvement in muscular coordination. C, Point where patient makes effort to relax.[1]

The remarkable effectiveness of EQUANIL may be demonstrated in two ways. One is by its ability to relieve muscle spasm and neuromuscular tension.[1] The second is by its ability to relieve mental tension and anxiety.

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1. Dickel, H.A., et al.: West. J. Surg., April, 1956.

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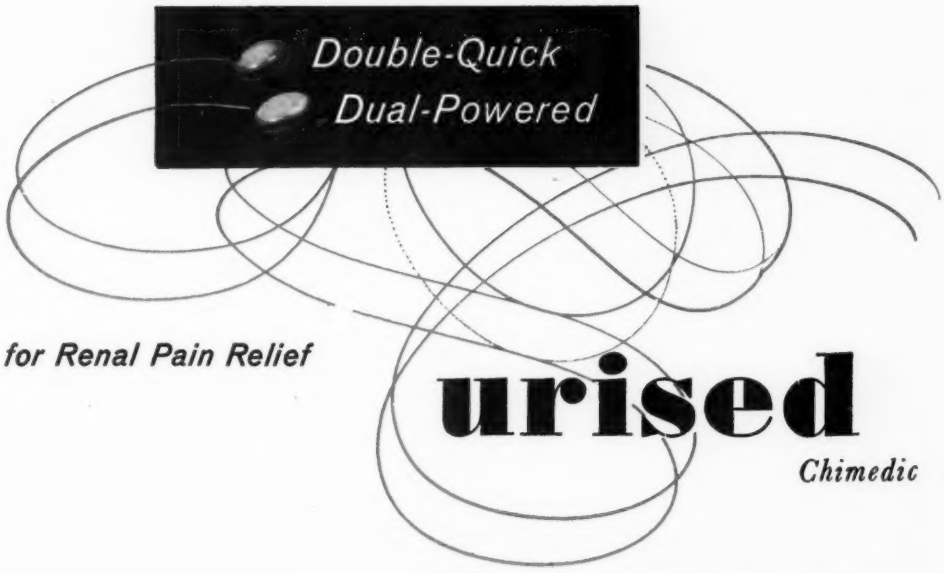

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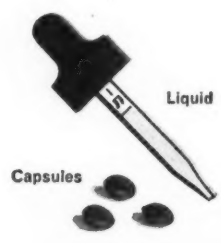
(1) Wilson, J. L., and Dickinson, D. G.: J. A. M. A. 158: 261, 1955.



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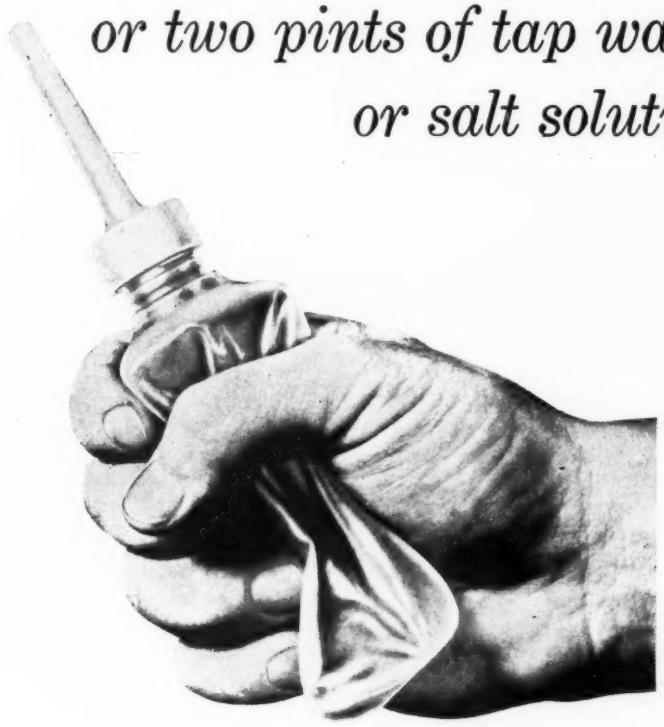

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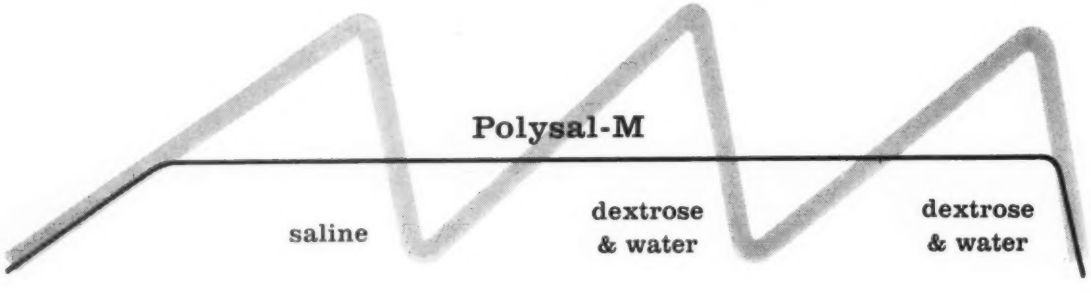

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*Talbot, N. B., Crawford, J. D., and Butler, A. M., "Homeostatic Limits to Safe Parenteral Therapy". New Engl. J. Med., 248, 1100 (1953)

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Osteopathic Manipulative Therapy in Geriatric Practice*

ROBERT B. THOMAS, D.O.

Huntington, W. Va.

THE INCREASED GERIATRIC POPULATION

The busy physician finds that his practice is made up of a steadily increasing proportion of middle-aged, elderly, and aged patients. He no longer spends a major portion of his time caring for babies with diarrhea, children afflicted with measles, diphtheria, or mumps, or adults suffering with typhoid fever, tuberculosis, or smallpox. The younger patients are far healthier than in former generations, and many more of them live to middle age to become victims of chronic degenerative diseases. The result is a steadily increasing interest in gerontology and the practice of geriatric medicine. A review of the sociologic changes during the past 55 years reveals the basic reasons for this changing pattern in medical practice.

In 1900, about 4 per cent of the population in this country were over 65 years of age, and 18 per cent were 45 years of age or older. In 1950, 8.2 per cent of the population were over 65 years, and 28 per cent were 45 years of age or older. In the United States today there are between 18 and 19 million persons who are 60 years of age or older. It is estimated that by 1980 40 per cent of the population of the United States will exceed 45 years of age and 14 per cent will exceed 65 years.[1]

The sharp fall in the birth rate and the drop in immigration of young adults account to a degree for the percentage increase in our aging population. Yet, at the same time, there has been a tremendous increase in the average expectation of life at birth. Shortly after the American Revolution, the mean length of life in the United States was 35.5 years; it had risen to 50 years by 1900; and today it is more than 68 years.[2] The sharp reduction of fatalities due to the infectious diseases during infancy, childhood, and early adult life has been, in the main, responsible for this increase in life expectancy. A marked increase in the effectiveness of the management of the ill patient over 50 years of age has also contributed to this increase in the life span.

Today, more people die as the result of chronic degenerative diseases than from acute infectious diseases. Physicians are being called upon more and more to treat and manage older patients suffering from degenerative diseases. Degenerative cardiovascular-renal diseases were highest in frequency in 1948, causing 52 per cent of all deaths in white males and 42 per cent in white females between the ages of 50 and 59. With each succeeding year of life, chronic degenerative diseases of the cardiovascular and renal systems increased in frequency until in the decade between 80 and 89 years they were responsible for 68 per cent of male deaths and 69 per cent of female deaths. The other leading causes of death in persons between 50 and 59 years of age were cancer (16 per cent in men, 31 per cent in women), accidents (6 per cent in men, 3 per cent in women), and respiratory infections (2 per cent in men, 2 per cent in women). Between the ages of 80 and 89 years the percentages were: cancer, men 11, women 10; accidents, men 4, women 6; and respiratory infections, men 4, women 4.[2]

Another group of diseases which cause illness and disability in older persons but which rarely appear as direct causes of death are the results of systemic wear and breakdown, such as rheumatoid arthritis, diseases of the nervous system, gastrointestinal disorders, and pulmonary emphysema. All of the diseases mentioned are generally considered under the term "degenerative diseases." The phrase implies the result of a progressive wearing out of tissues and organs of the body. It erroneously suggests that evidence of aging is expressed by the process and that chronic disease is an inevitable result of senescence. If this were so, we would be forced to accept invalidism of aging as an inescapable heritage. We would have to conclude that as physicians we are powerless to halt the progression of the process or to assist the human body in recovering from any of the damaging effects of the disease. The increase in the mean life span from 35.5 years in 1776 to approximately 68.9 years today attests the fact that medicine has not accepted this conclusion. Application of present knowledge both in the management of chronic degenerative diseases and in developing avenues of inquiry to increase our knowledge and understanding of these problems will make it possible to convert existence to living during the geriatric period.

As physicians we must be aware of all of the social and economic stresses which accompany longevity. We should be conversant with the work in allied fields as

*Presented at the Fifty-Ninth Annual Convention of the American Osteopathic Association, Los Angeles, July 22, 1955.

we move toward a solution of those problems which concern a way of life for a large group of individuals. We must recognize that there is a distinction between aging and disease and that the symptoms of degenerative diseases are not phenomena which are necessarily concomitant with chronologic age. Rather, we should regard these processes as conditions which are more overtly manifest in older persons, continually seek to determine their cause, search for improvements in present therapies, and seek new therapies for their prevention, control, or elimination.

The management of health problems in the older patient requires an objective approach. Aging and disease must be distinguished, and the patient rather than the disease must be treated; the alterations of structure and function which can change the manifestations of disease must be recognized; and each patient must be considered a challenge to the physician's diagnostic and therapeutic acumen. With such an approach, we can hope to prevent and control many of the chronic diseases commonly found in those of advancing years.

OSTEOPATHIC MANAGEMENT

A discussion of osteopathic manipulative procedures in the management of geriatric patients must of necessity be divided into two phases: first, the prophylactic application of osteopathic manipulative treatment designed to assist the patient to maintain a healthy body and, second, those same technics applied in the management of disease.

In my opinion, the first phase is the more important. It offers an effective program of preventive medicine to a large segment of the populace at a time when prophylactic care becomes a necessity. It is an addition to the usual routine care given by all well-motivated physicians to their older patients.

The spinal articular lesion and an understanding of its effect upon the function of the total human organism have been demonstrated clinically by many physicians. These observations have been supported by experimental evidence in the research laboratories by Denslow,[3] Burns,[4] Korr, Thomas and Wright,[5] and others. Emphasis is now on the known importance of the spinal articular lesion as a factor in the production of disease.

The physician must first be able to locate and diagnose an articular lesion before he can treat it. Diagnosis must be accompanied by the realization that the lesion pathology found in a given area of the spine is but a component part of a complex biologic process involving other tissues and organs of the human body which Korr[6] graphically symbolizes as the submerged part of the iceberg.

Clinical observations of persistent lesion patterns have been reported by osteopathic physicians for many years. While the application of indicated osteopathic manipulative procedures has been found to be widely beneficial in the management of these chronic degenerative functional disorders, it is also sound procedure to consider articular lesion pathology as an accessible link in the chain of events and circumstances which produced the disability in later life. It is also reasonable to assume that if this link were removed the later exhibition of a degenerative process might not be seen. The laboratory studies of Burns,[7] in which rabbits experimentally lesioned in the thoracic area developed degenerative changes in the coronary arteries, lend strong support to this statement.

The management of illness in the geriatric patient embraces the acute processes found throughout life and the chronic degenerative processes found so frequently in the patient past 50 years of age. The ability of the physician to make available to the patient the effective utilization of the inherent forces within his body will determine the degree of success attained in the management of both the degenerative and acute problems.

The management of the problems encountered in geriatric practice is based upon recognition by the physician of his duty to the individual. These are related yet distinct levels of the service to be rendered:

1. To establish the milieu that will enable complete recovery
2. To arrest the progress of the disease process with a minimum of disability and
3. To afford the maximum amount of comfort to the patient with irreversible pathologic findings.

The use of all those methods and modalities as may rationally be expected to contribute toward these three purposes is essential.

Basic in such a management program must be the employment of those therapeutic procedures which tend to call upon the inherent resources of the human organism which have to do with its adaption to its environment. Since the articular lesion provides an accessible link in the chain of events which permits the initiation of a disease process, it follows that applied osteopathic manipulative procedures become primary in prophylaxis and management. In my opinion, osteopathic manipulative therapy should become the basic approach to the problems of a geriatric practice, and other measures should be considered as adjunctive or supportive.

The steadily increasing number of middle-aged, elderly, and aged patients comprising a physician's practice should be accompanied by the realization that, strictly speaking, there are no diseases of the aged. However, the cause and frequency of disease are different at different ages. Therefore, knowledge of disease is not enough; it becomes necessary to distinguish between the process of aging and the process of disease as it appears in the aging organism.

It has been my good fortune to serve as a consultant in two nursing homes and one institution devoted to the care of the aged. As a result of these experiences some groups of conditions or diseases have come to my attention in sufficient numbers to warrant certain firm conclusions in their management. Discussion of a few of these diseases will illustrate the importance of osteopathic manipulative technics in their treatment.

Rheumatic Conditions.—

The term "rheumatism" has little meaning in the strict medical sense. It is used to include all kinds of disabilities involving bones, joints, tendons, and muscles, such as osteoarthritis, rheumatoid arthritis, fibrositis, bursitis, osteoporosis, gout, and night cramps. It is estimated that 7 million persons in the United States suffer from "rheumatism." This is nearly one third of the estimated 25 million individuals with chronic diseases.[8] Its frequency increases with each decade of life up to 70 years.

Osteoarthritis is the most common disorder of the joints in older persons. It has been said that some osteoarthritis may be found in every person past 50 years of age. It is the end-result of a process beginning very early in life. Bennett, Waine, and Bauer[9] have charted the history of these joint changes with painstaking care and graphically described them. While

their work does not settle with finality the question of whether osteoarthritis is the result of long-continued wear and tear of the joints or a time phenomenon of aging, it does establish the fact that joint disabilities develop as the result of the endless summation of stresses and strains encountered in the course of everyday living. The earliest changes are to be found in those joints which are subject to maximal pressure, stress, weight-bearing, and use or abuse. The disorder is preponderant in the spine, sacroiliac joints, hip, knee, and joints of the feet. Development of osteoarthritis is favored by disturbances of body mechanics, for example, flat feet with the resultant unequal and irregular weight-bearing on the several joint surfaces.

The slow, insidious development of osteoarthritis results in the patient's tolerating the gradually increasing pain and difficulty in joint motion for months or even years under the illusion that such pains are to be expected as part of growing old. The result is that many of these patients are seen after moderate to extensive damage to the surfaces and bony structure comprising these important weight-bearing joints. The lumbar and lower thoracic areas of the spine are especially vulnerable to the destructive changes of osteoarthritis. Treatment of osteoarthritis is difficult, yet if carried out with persistence and patience after intelligent planning of the therapeutic program, good results can be achieved. First, every effort must be made to spare the joints that are being damaged by restriction of their use. The patient rarely requires complete bed rest, but restriction of those activities which contribute to further damage of the involved joints must be required. Osteopathic manipulative procedures designed to re-establish motion and improve the circulatory mechanism of the areas involved are regulated to a dosage which will not cause further trauma. Persistent and careful application will in time restore much of the lost motion as well as contribute greatly to the relief of the patient. This is a condition in which all medical authorities recognize that internal medication will not materially affect the cause of the disease, and its only value is in relieving pain. The only therapy of lasting benefit results from adequate accommodation of body mechanics to the damage already incurred and prevention of further joint destruction where possible.

A variety of conditions is embraced in an ill-defined syndrome called fibrositis, characterized by aches and pains in the muscle and fascial tissues. Pain, stiffness, and soreness appear abruptly around a fascial sheath, joint, or in a muscle. Usually there is no hyperpyrexia or other evidence of constitutional reaction. Generally the pain and stiffness are exaggerated after the relative immobility of a night's rest and subside to a degree during the day with use of the affected structures. The symptoms may be so acute as to cause complete disability for several days or weeks, or they may be mild and continuous in their effect. Limitation of motion due to muscular spasm, marked aggravation of a dull pain by movement, and shifting of the site of pain characterize this condition. The patients are usually sensitive to change in weather, and lowering of the atmospheric pressure causes them to give louder voice to their complaints. The findings over the affected area consist of tenderness, muscle spasm, and localized areas of contraction which on palpation feel like the fibrous nodule sometimes noted in the tissue at the site of an unabsorbed injection of medication. These localized areas of contraction occur frequently in the area of the sacroiliac joints, and in the lumbosacral, cervicothoracic, upper cervical, and suboccipital areas of the spine. In the latter instance they are known to be the cause of severe cephalalgia following the course of the occipital nerve and termed by some, "nodular headache."

Basic in the approach to the management of these problems is the employment of osteopathic manipulative procedures designed to mobilize the articular lesions which form an important component of the syndrome. The use of fascial stretching technics and skin stretching complement the actual procedures of spinal lesion reduction. Frequently, maintenance of motion once it is produced will require the injection of small quantities of procaine or some other local anesthetic agent. Following injection, the patient should be instructed to exercise the part within prescribed limits.

Cardiovascular Disease.—

Each succeeding decade after 40 years brings an increase in cardiovascular diseases as a cause of illness and death. In the fifth decade heart diseases are responsible for 25 per cent of all deaths, and with each succeeding decade of life they exact a greater toll, until in the ninth decade, heart disease is responsible for 66 per cent of the deaths.

The increasing prevalence of cardiovascular diseases has led to the belief that factors in our present way of life are primarily responsible for it. The increased urbanization and industrialization of our people and the attendant hurry and strain of modern living have been suggested as the reason for the wearing out of the cardiovascular system. However, careful studies indicate that in the first 4 decades of life diseases of the cardiovascular system have decreased as the result of the lessened incidence of rheumatic fever and the control of certain childhood diseases. In my opinion, the increased ability of the physician to recognize diseases of the cardiovascular system eliminates the diagnosis of senility per se, and this diagnosis is being replaced by that of a cardiovascular condition. Boas[10] maintains as erroneous the concept that diseases of the heart and arteries in persons past 50 are inevitable manifestations of the aging process. Observations clearly indicate that cardiovascular disability is not simply a wearing out of the coats of the arteries or of the muscle, valves, and endothelium of the heart but that it is a disease which remains a challenge for continued scientific investigation and constructive therapy.

Etiologic factors found in the environment, occupation, or dietary habits and as sequelae to certain acute infectious diseases have been recognized and described in the literature many times. Burns[7] in her report on the effect of mechanically produced spinal lesions on experimental animals has demonstrated the degenerative effects that develop as a result of these pathologic structures. Most startling are the changes in the coronary arteries as the result of lesions in the upper thoracic area. These findings suggest that the use of osteopathic manipulation, especially in the thoracic area, is both good prophylactic therapy and good management procedure in the treatment of these conditions.

All physicians are acquainted with the gross kyphosis which develops in many older patients. Usually the structural change is asymptomatic for a time, and unless treatment is sought by the patient for cosmetic reasons or unless the condition is found in the course of a routine physical examination by a physician skilled in evaluating the potential of such a postural error, nothing is done about it until the compression of the

thoracic organs, the distortion in the reflex mechanism, and the altered blood supply have contributed to the development of a frank clinical condition.

The integration of structural studies into the physical examination of all patients, especially those past 50 years, becomes a must if we are to exercise our skills to the greatest degree of benefit for the patient. The number of cases of cardiovascular disease which have been prevented by the adequate management of articular lesions cannot be estimated with any degree of accuracy. However, the beneficial results of applied osteopathic manipulation in the management of hypertension, coronary insufficiency, auricular fibrillation, et cetera, indicate that the incidence of cardiovascular disease must have been reduced as the result of the application of these corrective procedures earlier in life.

Gastrointestinal Complaints.—

Among the most frequent disturbances which cause old people to seek medical attention are those involving the gastrointestinal system. Approximately half of these cases are disorders of function without frank organic disease. As is the case in complaints of the other body systems, there are no diseases of the alimentary canal confined exclusively to aging patients. In some of these diseases, however, bodily changes accompanying the aging process impress certain definite patterns. The changes in activity, interests, objectives, and attitudes as the retired status approaches, is reached, and is passed require adjustments in the dietary to meet the diminution of gastric acidity, the depression of pepsin secretion, and the blunting of the senses of taste and smell. Loss of appetite is related to these factors plus the reduction in energy requirement. Fatigue is a major factor in the production of anorexia. When tired, all people lose their appetites, the complaint being more marked with advancing years.

Constipation is the commonest of all gastrointestinal complaints in geriatric patients. The symptom may be genuine, or it may be the result of bad habits or psychic disturbances. Possible underlying causes demand careful examination of the intestinal tract to rule out conditions ranging from neoplasms to fissure in ano. The psychogenic factors must be carefully evaluated, especially in instances in which the patient is a resident of a home for the aged or confined in a nursing home, attended by a limited staff, where his major associates are in a similar age category. The desire for an equal amount of personal attention or for longer periods of association with a favorite member of the attending staff gives rise to many complaints, among them constipation. Once the factors producing the complaint have been determined, a therapeutic approach is selected which will provide optimum relief from the complaint.

Again osteopathic manipulative procedures are to be considered as primary therapy and should consist of those technics designed to restore, insofar as possible, normal motion in the lumbar and lower thoracic spine. Osteopathic manipulative treatment of the abdomen and digital or instrumental stretching of the sphincter ani have proved to be valuable procedures in the long-term management of constipation.

Acute Infectious Disease.—

Acute infectious diseases varying from the common cold to pneumonia are probabilities throughout life. However, these maladies assume potentially serious proportions in the older individual, coryza frequently leading to bronchitis and bronchitis to bronchopneumonia. This sequence in the elderly patient requires that the common cold be taken seriously. Bed rest in a room with a constant temperature of 72 to 75 degrees is an important and desirable measure in the treatment of a cold. Osteopathic manipulative procedures applied in proper dosage to the cervical and thoracic areas, including the anterior cervical structures, serve to produce marked relief from the distress of the common cold and, by improving venous and lymphatic drainage of the upper respiratory areas, contribute to speedy recovery.

I am convinced that the management of the more serious diseases of the respiratory system such as bronchopneumonia or lobar pneumonia is inadequate unless the patient receives osteopathic manipulative treatment designed to maintain thoracic motion and to insure the fullest possible competency of his inherent defense mechanisms. This is an opinion based on personal experience, and it remains unchanged in spite of the therapeutic value attributed to the sulfonamides, the antibiotics, and oxygen which, in my opinion, are valuable adjunctive or supportive measures.

APPLICATION

The preceding paragraphs are meant to call attention to the effectiveness of applied osteopathic manipulative technics in the management of geriatric problems. They are not intended to be a complete resume of the geriatric diseases which are benefited by osteopathic manipulative therapy. They are cited as examples in my own experience in which the principles of osteopathic medicine have contributed to the management and control of diseases of the aged.

Personal contact with a wide variety of geriatric patients has been possible through the contacts previously mentioned. The conditions managed run the entire gamut of physical disabilities, from malignant neoplastic disease and acute traumatic injuries to the common cold. Geriatric patients, from the bedfast invalid to the most active old person with an occasional acute illness, have been considered in this presentation. In all, the indications for applying osteopathic manipulative therapy were decided upon, and the results of this therapy were always gratifying. As stated earlier, the evidence of chronic degenerative diseases increases with advancing years. During the past 50 years chronic degenerative and functional disorders have displaced the infectious and communicable diseases as the major health problem.

In the light of personal experiences and the observation of the experiences of others, I hope the osteopathic profession, with its background of knowledge in the management of these diseases, will realize that its assignment for today and continuing into tomorrow is not only to contribute to the treatment but also to the prevention of those diseases and functional disorders which result from the physiologic collapse of a part or the whole of the human organism.

Today, no other school of medicine is so well prepared to treat these disorders, and none is so well prepared both in background and philosophy to develop the basis for their prevention. The latter objective will advance in proportion to the rapidity with which the research facilities of the profession can point the way to an evolutionary development by establishing clinical observations as biologic truths and not as occasional results of physiologic accidents.

More than fifty years of research in osteopathic colleges have disclosed an ever increasing body of knowledge which confirms the osteopathic lesion as a primary etiologic factor. Moreover, these important

investigations, both experimental and clinical, reveal the manner in which the osteopathic lesion produces its deleterious effects with the central nervous system as its primary organizer. This entity offers a primary approach to one of the causative factors and, therefore, an effective approach to prevention and treatment. The broad effect of this causative factor demands its correction in the prevention and treatment of the chronic degenerative diseases so prevalent in older patients.

Recognition of the concept that the human body is an integrated functional unit and that abnormal structure or function predisposes to abnormality in another part of the organism is now generally accepted as a basic principle in the healing arts. However, osteopathy is the only school of medicine which has strived to develop therapies consistent with the physiologic problems involved.

At any age, poor health is present or the pattern for disability is developing to a degree compatible with the abnormal structure and function found. The elimination of mechanical faults then becomes a primary approach to the prevention, repair, or control of a disease process.

CONCLUSION

In conclusion, it can be said that the prevention and management of geriatric problems by osteopathic manipulative procedures is based upon the diagnosis, evaluation, and elimination of the osteopathic lesion. This approach recognizes the lesion as a primary etiologic factor which is detectable in early stages of the process and which is amenable to conversion before it does irreversible damage. It is further established that, adequately applied, osteopathic manipulative procedures become basic to the programs of management established for the rehabilitation of those middle-aged, aged, or old patients who may be restored to society as happy, contented, and, in many instances, useful individuals.

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Emphysema

A Pneumonic and Circulatory Problem with Neuromuscular Mechanisms

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THE PROBLEM

Emphysema is being recognized more often in both the young and the old, and thereby offers material for a growing basic clinical approach. Increasing attention is being given to the pathogenesis of hypertrophic emphysema, as it frequently becomes a chronic, progressive, and degenerative disorder; its potential of reversibility in earlier stages is little known. Although emphysema is associated with several pulmonary and musculoskeletal disorders, it also occurs unrelated to them. Previous investigations[1,2] have indicated that the general cause could not be found in preceding tissue-destroying diseases of the lungs. In most cases the etiologic factors originate within functional disturbances of the breathing mechanisms. Searching for the earliest changes and means of correcting them should yield a satisfactory objective for medical investigators.

The height of the thoracic cavity varies with the movements of the diaphragm, and these are disturbed by the fitness, training, and development of the abdominal musculature.[3,4] Many patients, having lost muscular training, cease to exhale properly; consequently their lungs are in a state of chronic inflation from being in a continuous inspiratory position.[5,6]

The normal lung has perfect elasticity; it returns to its former size and shape by passive recoil following withdrawal of the distending inspiratory forces. Thus, the expiratory act is essentially passive because of the elastic qualities of the lungs and chest wall.[7] The weight of the chest wall is also a contributing factor. In order to increase the speed of expiration there may be normal assistance from the internal intercostal and anterior scalene muscles. The latter anchor the first rib, and the former elevate the second and lower ribs so as to control an increase in intrathoracic pressure by diminishing the volume of the thoracic cage, thus allowing increased intra-abdominal pressure to be referred through the diaphragm.[4,8]

In a normal person the chest wall continuously exerts traction on the lungs, but this force is counterbalanced by the elastic pull of pulmonary tissues.[4,7] With loss of elasticity, the lungs must yield to the traction of the chest wall and distend until this force is obliterated. Therefore, the functional residual air must increase in volume until the intrapleural pressure approaches that of the atmosphere. This increase in the volume of residual air is at the expense of the inspiratory reserve, because the size of the thoracic cage limits the volume of a forced inspiration. The expiratory volume may also diminish, and the sum of these factors results in a reduced vital capacity.

Maximum muscular effort could empty the lungs to a normal extent if increased resistance were not encountered.[6] This may result from bronchial obstruction, skeletal changes with stiffened and lengthened cartilages, elevated and rotated ribs, forward raised sternum with kyphotic thoracic spine, or atrophy or fibrotic shortening of the diaphragm. Changes in costal

vertebral articulations interfere with chest movement and further immobilize the thorax.[8]

In emphysematous persons the diaphragm, instead of being elevated by elastic recoil of the lungs during respiration, is impeded so that it is unable to return upward to the fully relaxed position after each breath.[9,10] During expiration compensatory mechanisms lead to the generation of more extrinsic intra-abdominal muscular effort, resulting in an increased positive intrathoracic pressure.[4]

The intrapleural pressure has been measured in relation to the retractive force of the lung. Within the range of tidal air in normal chests a given volume change in distention of the lung is proportional to the change in intrathoracic pressure as a linear curve.[11] Since the retractive force in emphysema is less than normal, it is the subject of a study of elastic resistance termed "compliance." Such cases also have irregularity in the level of tidal air with the end-point of expiration moved toward the inspiratory position.

The diaphragm is flattened and may gain mastery over its entire costal margin as demonstrated by the lessened spread of the hypochondriac angle at the end of inspiration. The emphysematous chest is accordingly at a great mechanical disadvantage in ventilation.[12] As so-called abdominal breathing disappears and the respiratory motions become more thoracic in type, there is tension and flattening of the abdominal wall plus tightening of the involved neck and back muscles. These dynamic alterations automatically lead to a changed static activity seen as a posture-shaping element which determines the size and form of the lungs and can be described as emphysematous immobilizing volumes. Normalization of the breathing movements and posture represents a fundamental problem of therapy.[1]

The chief functional problem, that of poor distribution of atmospheric gas into and throughout the lungs, is due to two types of respiratory force which need to be overcome: first, the static elastic stretch which affects depth or volume, and second, the dynamic viscous forces which cause resistance to flow in the air passage. Being a loss of distensibility with an enlarged area, the former depends upon increased duration for a deep breath. The latter, a bronchial impediment with narrowing and turbulence or inertia by weight of distended abdominal organs, changes with the rate of air flow owing to this new magnitude of forces.[9,13-15]

The total force is proportional to the pressure around the lungs and can be estimated by measuring intraesophageal pressure. Breathing from a closed tank simulates loss of the elastic quality, whereas breathing through a narrow tube resembles increased viscous force. Viscous tissue resistance occurring during the mechanical stiffening of lungs as in congestive failure augments dyspnea.[15,16]

If intrapleural pressure represents the force exerted and tidal air is the work done, then their simultaneous recording will show the efficiency of the respiratory mechanism.[17] It has been said that in normal man 65 per cent of the total work in breathing is used to overcome elastic forces, 29 per cent is associated with movement of air, and 6 per cent in deforming tissues. Maximal ventilation can be raised to 15 or 20 times that of resting, but the rate of work required is 500 times greater.[18]

An exercise regimen assisted by diminishing oxygen administration in emphysematous, nontuberculous patients yielded progressive improvement in their ability to walk without dyspnea, and this ability appears to be a learning and developmental process such as that occurring in the training of athletes. The good results were considered due chiefly to improvement in circulatory function.[19]

The positive intrapleural pressure which exists in emphysema during much of the respiratory cycle is reflected by an increase in the venous pressure, not only in peripheral vessels, but also within pulmonary veins, where secondary engorgement of pulmonary capillaries and rigidity of the lungs result. Shortness of breath may come from the associated increased sensitivity in the Hering-Breuer reflex.[16] Rapid breathing, with exercise, plays a significant role in the increase of venous return to the right heart. The venous pressure varies directly with pressure changes in the pleural cavity.[20-21]

Bronchial spasm can be recognized and relieved by the use of Isuprel aerosol.[22,23] Retention of secretions is known to respond favorably to intermittent positive pressure breathing during inspiration if the case is in an early stage.[24] Bronchial lavage and exsufflation with negative pressure better eliminate mucopurulent secretions in advanced emphysema cases. The viscid secretions are more easily expectorated.[25] The results obtained with new methods increase the impression of the reversibility of this disease.

Intermittent positive pressure breathing secondarily alters cardiac hemodynamics, but primarily it provides adequate ventilation by more efficient motion of the diaphragm and by increasing the minute volume and depth of inspiration. There is no increase in effort required and overdistention of the lungs or aggravation of emphysema does not follow. It also facilitates elimination of carbon dioxide. There is more uniform alveolar aeration and increased arterial oxygen saturation.[25]

Positive pressure breathing can allow elevated intrathoracic pressure which impedes excessive venous return to the heart in congestive and emphysematous states. An increase in peripheral venous pressure will, however, maintain a gradient for adequate flow. Attendant generalized arteriolar constriction aids by reducing the shift of blood into the venous system. Increased intrapleural pressure is transmitted through the intervertebral spaces to the cerebrospinal fluid and then upward to form an outer support for distending cerebral venules.[26] It seems probable that as the lungs expel air they also expel blood.[27]

A similar influence was found to occur in coal miners who exercised on a treadmill. Moderate exercise produced deeper breathing, improved diaphragmatic tone and motion, and improved gas exchange.[28] Conversely, bed rest appears to reduce vital capacity.[29] The increase in pulmonary ventilation in metabolic hyperpnea is in direct proportion to the increase in metabolism as measured by oxygen consumption. In compensatory hyperventilation the increase in ventilation is out of proportion to metabolism.[30] On the other hand, emphysema usually leads to relatively diminished ventilatory response to exercise owing to diaphragmatic ineffectiveness and paradoxical chest motion.[4]

Histologic features of hypertrophic emphysema include thin, stretched, and torn alveoli, enlarged or distended bronchioles, torn and obliterated capillaries, and atrophic bronchiolar arteries. The superficial alveoli, which are those subject to the greatest stress and damage, serve only to increase physiologic dead space, and their ventilation is wasted effort. The peripheral bullae

or blebs thus formed are hyperventilated at the expense of the normal deeper situated alveoli.[4,31,32] Some tidal air is consequently dissipated into these cul-de-saclike alveoli which are ischemic and ineffective.

The inequality of distention in different areas of the lung results in an unequal mixture of gases and consequent shortness of breath which is increased by exercise.[33] This is not affected by posture, although positional changes shift the preponderance of ventilation within the several segments.[34,35] Respiratory dead space is greater when the patient is sitting than when supine; it has been found to increase from the average normal mean of 127 cu. mm. in young men and 150 cu. mm. in older men to an average of 169 cu. mm. during quiet breathing in emphysema.[36]

Exercises improve muscular performance but may not improve bronchiolar cross-sectional areas when fibrosis is established. Response to bronchodilator drugs fortunately classes the obstructive case as one not permanently and completely limited by fibrosis.

The form of the carbon dioxide excretion curve in emphysema suggests a disturbance in proportion between ventilation and perfusion.[37] The reduced pulmonary reserve demonstrates an average ventilation equivalent for oxygen during exercise of 2.98 liters (normal 2.2 to 2.5) per 100 cc. oxygen absorption.[38] With failing respiratory compensation there is imperfect aeration of blood.[39,40]

Alveolar scarring and sclerosis impair diffusion of gases and therefore result in faulty aeration of the blood.[41] Hypoxia increases the pulmonary blood pressure, cardiac output, and blood volumes.[42] Chronic hypoxemia is a direct cause of polycythemia, hypervolemia, and reduced vascular bed. An acute bout may precipitate right heart failure. Lower oxygen tension in isolated parts of the lung may result in shunting away of blood to better ventilated alveoli by way of a local mechanism.[43] Oxygen saturation of arterial blood varies inversely with the mean pulmonary artery pressure at rest.[44] The higher degrees of pulmonary bed destruction are accompanied by low cardiac output and pulmonary hypertension resulting from the vascular disorder rather than from the anoxia.[45]

With exercise, patients have shown increases in pulmonary artery pressure due to the presence of precapillary hypertension. When exercise produces a state of oxygen deficiency there is a preponderance of vagotonia which increases pressure in the right atrium, stroke volume of the right ventricle, right coronary blood supply, and also the blood volume of the lungs. The last is a passive capillary congestion. The origin of the surplus blood for the lungs has been considered the result of a decrease in the splenic depot, a phenomenon which responds to breathing exercises. The left heart may be uninfluenced.[46,47]

Corrective procedures which attack the faulty posture and mechanical pattern or breathing require description in principle.

Breathing is concerned with reflex factors from within the lung (vagal), carotid body (Hering's nerve), and the right heart to the respiratory center as well as with chemical drives from the respiratory center, respiratory membranes, and skin, and also significantly from the Golgi tension reflex organs located in tendons. The Golgi endings send increasing numbers of signals through the respiratory centers and cord, serving automatically to strengthen contractions, thus producing inspiration. The Golgi mechanism serves to reduce enhancement of the driving forces concerned with increased breathing which is adapted to overcome increasing resistance by obstruction. The emphysematous patient could have segmental or universal spinal dysfunction influencing visceral function as a result of altered vascular supply to the autonomic nerves. Striated muscle serving as an irritable focus may have a pathologic physiologic factor concerned with such neuromuscular mechanisms as the Golgi organ, and this continued attention promotes postural and functional disorders in the act of breathing.[48,49]

Stretching of the lungs during the normal inspiratory act increases the vagal (Hering-Breuer) drive upon the inspiratory reticular cells which results in reinforcement of the inspiratory act by building up the strength of contraction to the end of inspiration. The deeper the inspiration becomes, the greater is the energy required to continue it. The increasing strength of the vagal reflex assists the depth of inspiration as the vagi automatically provide stimulus for the extra mechanical energy required. Thus, facilitation takes place in the breathing mechanism, but it may be perverted in the emphysematous case. Therein lies a question to be answered in addition to the medical problems which concern infection and bronchial stenosis.[50]

Breathing exercises which can be of specific benefit in the treatment of emphysema should be aimed toward improved posture, increased relaxation, enhanced muscular efficiency, and improved general circulation and muscular tone. Such exercises are included as progressive exercises within the particular patient's capacity.[51]

CORRECTIVE PROCEDURES

Emphysema is associated with faulty posture presenting abnormalities in the back and chest. Breathing is strained and largely thoracic.[51] Treatment should be directed toward relief of the strained condition and toward induction of relaxation so that the back and thoracic cage can resume normal relationships. If proper posture can be achieved through training, manipulation, and massage, normal breathing will develop as a natural concomitant.

A posture-training program must be prescribed on an individual basis. It should be directed toward correction of specific postural anomalies. In many cases, emphasis should be placed on relaxation in order to eliminate the strained, tense position of the thoracic cage and to restore normal, relaxed relationships.[51,52]

Altered dynamic activity of the respiratory muscles leads to a changed static, that is, posture-shaping, activity; conversely, if the static[46] activity of the muscles can be restored to normal it must lead automatically to changed dynamic functioning.[53]

Relaxation of the auxiliary respiratory muscles will need to be taught.[54] The services of a therapist may be necessary to assist the patient in his initial posture-training attempts. Also, the patient may be taught to assist his expiratory effort by manually compressing the lower thoracic cage and lifting up the diaphragm.[55]

Reduction in the size of the chest should be the objective of any exercise or posture-training program with emphysematous patients.[33] Any attempts to increase the expansion of the chest are useless and may even be harmful, inasmuch as the patient is already capable of expanding his chest to the greatest possible degree. The circumference of the chest may be reduced as much as 3 to 4 cm. by firmly pressing the ribs down simultaneously with respiration. Massage is aimed at literally squeezing air out of the lungs.

The kind of exercises used as corrective therapy

with emphysematous patients may be grouped as follows:

1. Breathing exercises, aimed at increasing the efficiency of ventilation by decreasing the amount of costal (upper thoracic) breathing and increasing the amount of diaphragmatic and abdominal breathing.[56,57]

The tidal air is usually increased as is also the maximum breathing capacity but, more important, alveolar air is more thoroughly mixed with dead space air, producing an increase in effective ventilation.

Exercises are aimed at teaching the patient to recognize diaphragmatic, as opposed to costal-type, breathing. This is usually best approached by having the patient in a supine position and giving him manual assistance during expiratory maneuvers.[53] An attempt is made to have the patient perform expiration as an active movement and inspiration as a passive "recoil" movement;[5] therefore, no obstruction (such as pursed lips) should be offered to the outflow of expired air; the mouth should be in an "ah" position.[58]

2. Relaxation exercises are aimed at relaxing the auxiliary respiratory muscles of the chest, neck, and back so that the normal relationships of the thoracic cage may be restored.[33] A prolonged, strained type of breathing in emphysema cases has resulted in the thoracic cage being held in an elevated inspiratory position by tense respiratory muscles. If these muscles can be made to relax, the thoracic cage will resume its normal position.[51,56]

Manual massage may help to relieve muscle tension and permit the thoracic cage to regress to its former relaxed position.

It is important that the patient learn to recognize the feelings of both tension and relaxation so that he may consciously attempt to recapture the feeling of relaxation.

3. Calisthenic-type exercises are of a very mild nature and should be aimed at toning flabby muscles and relaxing tense muscles. In addition, they may be directed toward elimination of postural anomalies. Vigorous, stimulating exercises are contraindicated inasmuch as they may produce dyspnea and aggravate the condition rather than benefit it.

Weiser[59] has described an exercise program including mild medical gymnastics, humming, whistling, singing, chest lifting and shaking, and walking exercises. Ewerhardt and Riddle[58] describe an elbow-circling exercise. Mennell[60] has suggested quiet exercises involving relaxed and mildly resisted movements and also a "terrain cure," which is prescribed amounts of walking along paths of varying inclines.

Miller[52] has outlined the complete exercise program that is used with emphysema patients at Johns Hopkins Hospital. It is based on a progression of exercises which are determined by the exercise capacity of a patient and his improvement.

This discussion of emphysema has been undertaken with an approach which aims to correlate postural evaluation, breathing pattern analysis, physiologic pulmonary measurements, neurocirculatory mechanisms, and a corrective therapeutic regimen.

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NEW YORK CITY, 1956

A sixtieth forgathering of the osteopathic profession challenges the imagination; to move into a seventh decade either for men or organizations is an achievement not to be dismissed lightly. And when such an occasion is the Sixtieth Annual Convention of the American Osteopathic Association and a return for the fourth visit to this world-city of all time, it is indeed an important one. All this adds up to the fact that no one should brush off this year's convention without careful consideration, and any osteopathic physician who has decided against going should reweigh his decision. The advantages of attendance at the Convention in New York City in 1956 can be outweighed only by serious responsibilities at home.

The details about the Convention are readily available. This JOURNAL is the program issue. Examine it. The program speaks for itself. Even if you should decide that New York City, 1956 is an impossibility, a glance at the program will epitomize osteopathic progress for you. Facts on New York City itself and its recreational and educational opportunities for the families of osteopathic physicians should not be overlooked.

The nearness of the Philadelphia College of Osteopathy, one of the profession's finest educational institutes, makes it an added attraction to convention guests. The instruction courses made available for the week preceding the Convention (July 9-14) by the College have aroused wide interest. As in Los Angeles, these courses are a part of the Convention and are made possible by a combined and coordinated effort. Details as to the instruction courses have been presented in the April FORUM and are a part of the program in this issue of THE JOURNAL.

The complaint that little opportunity is offered to doctors of osteopathy for adequate postgraduate training has become an old wives' tale, no longer borne out by the facts in the case. The demonstration of "Studies in Motion" by cineradiography referred to in the editorial paragraphs that follow is in itself a unique opportunity to research, teaching, and diagnostic possibilities in the making. This part of the program has a significance that must be seen to be appreciated; it cannot be read about later.

Whether this will be your first or your fourth New York A.O.A. Convention, it is bound to be a memorable and worth-while experience.

STUDIES IN MOTION—A CONVENTION PRESENTATION

"Studies in Motion" which will be an outstanding feature of the 1956 A.O.A. Convention deserves special explanation and emphasis. First, every osteopathic physician should know about the progress of cineradiography whether or not he is fortunate enough to be in New York City from July 16 to 20. But once there, the opportunity at hand, the doctor should be intelligently prepared to view the demonstration if he is to appreciate its full significance. Cineradiography as a word offers no difficulty if it is related to the word "cinema," although many physicians are not aware that x-ray motion picture technics are now so developed as to be of actual value in medical research, teaching, and diagnosis and that they offer even greater promise for the future.

X-ray motion pictures are made in two ways, the direct method, known as cineradiography and the indirect method, or cinefluorography. In cineradiography x-ray exposures are made in rapid succession on regular x-ray films which are carried by a special motor-driven changer. The finished films are then photographed in sequence on motion picture film. With cinefluorography, the x-ray image appears on a fluoroscopic screen and is photographed from the screen with a motion picture camera. Cinefluorography is a more flexible technic, but is still in its earlier stages of development.

Much of the research in this field has been aimed at reducing the amount of x-ray exposure to which the patient is subjected. A shorter exposure time is one of the advantages of cinefluorography over cineradiography, made possible by the use of high-speed lenses and special motion picture film which is capable of high contrast and has its maximum sensitivity in the color range shown on the fluoroscopic screen. More recent developments, now being investigated, involve the use of 70 mm. film and an intensifying tube in place of the conventional screen.

The films may be studied either as individual still pictures or as motion pictures. The finished strips of film are formed into continuous loops for projection, so that the cycle of motion is repeated over and over again for study, and a special projector developed at the University of Rochester permits the study of individual frames in the sequence of action.

At the University special technics of cineradiography are being developed. For the past 10 years the

Department of Radiology has worked successfully on the project, establishing itself as the center from which this unique contribution to the medical world is being made.

The 1956 Program Chairman, Dr. Myron C. Beal, points with special pride to that spot on the program to be filled by George H. Ramsay, M.D., Director of the Department of Radiology of the University of Rochester, who with James S. Watson, M.D., and Mr. Sydney A. Weinberg will present these studies in motion. Dr. Beal is hopeful that this unique opportunity becomes widely known and results in a large attendance.

A PUBLIC WARNING

One of the most important Government agencies, the Food and Drug Administration, U.S. Department of Health, Education, and Welfare, took unprecedented action on April 4, 1956, by its public warning issued to the American people through a release to the nation's newspapers. The exact language of the first paragraph of the release is as follows:

> Sufferers from cancer, their families, physicians, and all concerned with the care of cancer patients are hereby advised and warned that the so-called Hoxsey treatment for internal cancer has been found by the United States Court of Appeals for the Fifth Circuit, on the basis of evidence presented by the Food and Drug Administration, to be a worthless treatment.

Readers of THE JOURNAL will recall that an editorial in the October, 1952, issue reviewed the essential details of the Hoxsey case to date, quoting important principles in medical diagnosis and therapy enunciated in a decision by the U.S. Court of Appeals for the Fifth Circuit, based upon the testimony given by cancer experts at the time of the trial.

These principles state so succintly the teaching and experience of modern medicine and are so integral a part of the training of all osteopathic physicians that they are reiterated in this column:

> [1.] . . . there is only one reliable and accurate means of determining whether what is thought to be cancer is, in truth and fact, actually cancer. This requires a biopsy, a microscopic examination of a piece of tissue removed from the infected and diseased region.
>
> [2.] . . . the opinion of a layman as to whether he has, or had, cancer, or a like opinion as to whether he has been cured and no longer bears the disease, if, in fact, it ever actually existed, is entitled to little, if any, weight.
>
> [3.] . . . despite the vast and continuous research which has been conducted into the cause of, and possible cure for, cancer the aggregate of medical experience and qualified experts recognize in the treatment of internal cancer only the methods of surgery, x-ray, radium and some of the radioactive by-products of atomic bomb production.
>
> [4.] . . . upon such subjects a Court should not be so blind and deaf as to fail to see, hear and understand the import and effect of such matters of general public knowledge and acceptance, especially where they are established by the overwhelming weight of disinterested testimony. . . .

The final words of the Release issued under the signature of George P. Larrick, Commissioner of Food and Drugs, are as follows:

> Those afflicted with cancer are warned not to be misled by the false promise that the Hoxsey cancer treatment will cure or alleviate their condition. Cancer can be cured only through surgery or radiation. Death from cancer is inevitable when cancer patients fail to obtain proper medical treatment because of the lure of a painless cure "without the use of surgery, x-ray, or radium" as claimed by Hoxsey.

There is a prophetic simplicity and seriousness in this statement not found too often in the papers of any government.

MEAD JOHNSON GRANTS IMPLEMENTED

The plans for the Mead Johnson Graduate Education Program are already known to JOURNAL readers through an editorial announcement in the January, 1956, issue. The editorial pointed out that Mead Johnson and Company, Evansville, Indiana, have provided through grant to the American Osteopathic Association financial support for awards in graduate education to osteopathic physicians in the field of general practice.

The program is now under way with the selection of three of the grantees and the determination of the date they will begin study. Dr. Betty Alice Green has been named as Mead Johnson Fellow to the College of Osteopathic Physicians and Surgeons, Dr. Frank W. King to the Des Moines Still College of Osteopathy and Surgery, and Dr. Delbert E. Maddox to the Kirksville College of Osteopathy and Surgery.

The American Osteopathic Association congratulates these young osteopathic physicians as the first participants in a new program of osteopathic graduate education. In a sense, these doctors are pioneers for they are participating in a type of award which is recent in medical education generally. They are called upon to demonstrate not only their worth as individuals but to establish the significance of such a project to society as an integral part of graduate osteopathic education. Thereby will the far-sighted grantors of these scholarships be justified in so tangible an expression of faith in not only a new type of scholarship support but one especially set up for osteopathic education.

THE RILEY GIFT

The name of the late George W. Riley is again in the news, and again within the selflessness in which his life moved and to the purposes to which it was dedicated.

It was stated some months ago that the Kirksville College of Osteopathy and Surgery had been named in Dr. Riley's will as the major beneficiary of his estate. Just as this issue of THE JOURNAL goes to press, the College announces that "final settlement of the estate will bring the amount of the gift to the College to a figure slightly in excess of $100,000." True appreciation of the gift to the osteopathic movement as vitalized in an osteopathic college should not be permitted to eclipse the significance of the life and a profession which made the gift possible.

Osteopathy has brought enduring satisfaction to many men who have spent their lives in its practice; to a smaller group it has brought opportunity for recognition and honor aside from that accorded them from within their own organization. There have been men in both groups who have shown a deep sense of appreciation for the satisfactions they have derived as osteopathic physicians and from the honors bestowed upon them. To such men especially the practice of osteopathy came to be more and more a way of life, their sense of dedication deepening, until their lives and their profession became as one. These are the men who, having received much from their profession, ploughed back seed into the furrow they themselves turned. Their action paraphrases Webster's pattern of thought in arguing the Dartmouth College case before the Supreme Court 137 years ago—It is, sirs, a small profession, and yet there are those who love it.

Knowledge of the Riley gift is important to osteopathic physicians and students, but it is equally important they know of the giver, for in that knowledge they may say, "This, indeed, was a man." It is in the character of such men as George Riley that osteopathy today has its roots.

Notes and Comments

Fluid Balance.—

Recent trends in treatment of fluid and electrolyte imbalances have made it both more effective and more complex than in the not-so-ancient days when the physician was largely restricted to a choice of glucose in water, glucose in saline, or saline without the glucose. Unfortunately, as the variety of useful solutions available has grown, so has the number of factors that must be considered when choosing the proper therapy, to the point that practitioners may occasionally find themselves wondering if the improvement is worth the extra confusion the therapy occasions. Because of this, simplification of the subject without loss of the advantages gained is a definite need. This need has been admirably met in the article, "Systematic Approach to Fluid Balance," by W. D. Snively, Jr., M.D., with M. J. Sweeney, M.D., and M. L. Weisner as co-authors, that appeared in the January and February, 1956, issues of *GP*.

The two-part article emphasizes general principles rather than voluminous detail and brings welcome clarity to the subject. An example of how this is done is to be seen in the following:

> The infant's relatively greater extracellular fluid volume probably serves as a protective mechanism to conserve body fluid. Important amounts of fluid are lost via the skin. The quantity lost is directly related to body surface area, measured in two dimensions. *But the fluid is lost from the body, which has volume and three dimensions.* Compared to the adult, the infant has only about one-third the body volume per square meter of skin surface. He is, therefore, considerably more vulnerable to fluid loss, at least as far as his skin is concerned. . . .

The article goes on to point out that loss via the skin is drawn primarily from the extracellular fluid, and the fact that the infant has proportionately twice the extracellular fluid that the adult has exercises some protective effect on the infant's homeostasis.

While the authors use the customary scheme of three compartments of body fluid, namely, intravascular extracellular, extravascular extracellular, and cellular, they note that this is misleading. They bring out the fact that these are not compartments in the true meaning of the word, and that all intracellular fluid is lumped together under one heading only because we know too little about fluid distribution in the body cells to do better. It is also noted that this grouping of the fluid contents of all types of body cells into one category may be ". . . one of the greatest oversimplifications of modern physiology."

Various disturbances of fluid balance, including fluid volume, electrolyte concentrations, and acid-base balance are all discussed in the light of their causes, clinical signs, laboratory findings, and treatment. The article is to be particularly commended in that it has sufficient detail to permit its use as a practical guide in the treatment of specific problems while maintaining simplicity of presentation and providing unification of the various facets of the subject.

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The Hebrew Medical Journal.—

THE JOURNAL again has occasion to commend its distinguished contemporary, *Harofé Haivri, The Hebrew Medical Journal,* this time for its Volume 2, 1955, issue. Readers interested in medical history will be especially appreciative of three articles in the issue dealing with the physician in Jewish law and religious literature, Jewish medicine from a historical standpoint, and endocrinology in the Bible. A special article of high historical scholarship is the review with excerpts of an unpublished medical book, "The Art of Cure," by Maimonides, in honor of the seven hundred and fiftieth anniversary of the death of this great medieval physician and philosopher.

The Hebrew Medical Journal, although almost lost in the mounting tide of medical periodical matter, is a distinctive and distinguished contribution to medical writing, now in its 29th year.

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Minor Open Wounds.—

Minor open wounds receive too little attention from the public and many doctors, and, what is worse, the attention they do receive tends to produce poor results rather than good ones. The universal tendency, of course, on sustaining a minor cut on the hand is first to suck on it, then wrap it in a handkerchief, and later to dab on an antiseptic and apply a gauze dressing that may or may not be sterile. Burns and superficial lacerations are likely to be smeared with butter or any handy ointment and covered with an unsterile dressing.

Sucking on a wound and wrapping it in a nonsterile handkerchief will guarantee contamination, applying antiseptic in the wound will almost certainly kill tissue, giving the bacteria present in the wound ideal culture media to feed on, and all too frequently the gauze bandage is applied in such a way that drainage is prevented. There is little more, aside from actually inoculating the wound with pure cultures of pathogenic bacteria, that could be done to promote infection. Under the circumstances, it is surprising that grave consequences ever fail to ensue.

Most first aid kits contain gauze bandages in a state of doubtful sterility, an antiseptic harmful to tissue, and possibly a nonsterile ointment with which infections in burns can be sealed in. There is a distinct possibility that soap and water and a brush and a knowledge of how to use them would result in marked improvement in results.

The first principles of wound management are cleanliness and protection from contamination. The second important principle, according to an editorial in *Surgery, Gynecology & Obstetrics* for March, 1956, from which this material was drawn, is rest. Splinting is recommended as a means of assuring complete rest for the injured part.

The author of the editorial, Carleton Mathewson, Jr., M.D., contends that the dividing line between major and minor trauma is not fixed, and that major consequences can ensue from minor trauma when improper treatment is applied. There is little to argue about in the author's conclusions that the early recognition of the extent of any injury and proper treatment by cleansing, rest of the injured part, and prevention of contamination will hasten healing and prevent many serious sequelae from developing.

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Cancer Cause?—

A noted authority has come to the conclusion that all cancer cells originate from normal body cells through a two-phase alteration in cell respiration. In the first phase of this process, there is an irreversible injury to the normal mechanism of respiration. This leads, as might be expected, to a high mortality rate among the injured cells. Unfortunately, those cells that do survive do so by going through the second phase, in which their metabolism is altered in such a way that they no longer receive respiration energy through direct use of oxygen, but by the process of fermentation. Because fermentation is an inferior means of obtaining energy, the highly differentiated characteristics of normal body cells are lost, and the relatively undifferentiated cells that result are wildly growing cancer cells.

These are the conclusions of Professor Otto Warburg, Director of the Max Planck Institute for Cell Physiology in Berlin-Dahlem, Germany, who contends that in view of today's knowledge there is no alternative to them. Presenting his conclusions in the February 24, 1956, issue of *Science*, he notes that the many agents now known or thought to be productive of cancerous changes are actually remote causes, with altered cell respiration as the common link and immediate cause of malignancies. Professor Warburg also expresses the opinion that there is danger of becoming so preoccupied with the remote causes that we will neglect giving due consideration to the immediate cause and may therefore actually delay solution of the cancer problem through misleading and unproductive research.

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WHO.—

The real purpose of the World Health Organization is largely unknown to most people. This is the conclusion of Herman E. Hilleboe, M.D., Commissioner, New York State Department of Health, who states that WHO is a ". . . synthesis of the desires of all peoples, regardless of politics, race, creed, or color, to obtain good health through cooperative effort."

According to Dr. Hilleboe, there is a tendency in the United States to overlook contributions to public health that come from other countries. As examples of such contributions he cites the work of Pasteur, Lister, Roentgen, and Einthoven, and notes that we owe penicillin to the British, insulin to the Canadians, and DDT to the Swiss. He also points out that nobody can say from which country the next great advance will come.

Certainly the intelligence of physicians everywhere is such that they realize that good health is not properly a special boon to be enjoyed only by a favored few, but that it should be widespread among all nations. In addition, we in the United States have a practical interest in the world-wide improvement of health: modern transportation has torn down most of the natural barriers that in the past isolated us from the great scourges prevalent in other parts of the world. Thus, for both altruistic and selfish reasons, it is imperative that we do what we can to promote the work of the World Health Organization, which is the one opportunity we have to contribute to the solution of health problems on a global scale.

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Serotonin.—

Serotonin, known since 1918 to be present in the brain and blood platelets, has long been thought to play a role in spontaneous hemostasis and clot formation, but its function in the brain was unknown. However, recent research conducted at the National Heart Institute of the United States Public Health Service indicates that the substance plays an important role in brain function, but that it has no hemostatic role. These entirely unexpected findings grew out of work done with reserpine, which has the ability to liberate bound serotonin in both brain and platelets. The tranquilizing effect of reserpine appears to be due to the liberation of serotonin in the brain, but the role of serotonin in the platelets remains obscure. The researchers explained that the loss of over 90 per cent of platelet serotonin has no measurable effect on bleeding time, which leads them to believe that it has no hemostatic function.

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In Briefer Form.—

Clinical investigation carried out on vitamin B_{15} and published previously in THE JOURNAL by Dr. A. L.

Pettigrew received prominent mention in an article describing the vitamin in E. Merck's *Yearbook* on innovations in the field of pharmacotherapy and pharmacy, published in Germany in December, 1953. . . . Dental protection during endotracheal intubation or endoscopy can be significantly increased with the use of the Greenblum Mouth Protector, according to the *Cleveland Clinic Quarterly* for January, 1956. The new device, made of semirigid rubber, fits over the teeth and cushions them against mechanical injury, or if injury cannot be avoided, retains the fragments so that they will not be inhaled by the patient. . . . Nineteen young American Indian women from six states were recently graduated from the Indian School of Practical Nursing at Albuquerque, New Mexico. According to the United States Public Health Service, which operates the school, the young women are expected to return to Indian reservations for employment in hospitals there. . . . The Talbert Abrams Award of the American Society of Photogrammetry has been awarded to Dr. Paul Rosenberg of Paul Rosenberg Associates for a research paper reporting new applications of information theory, electronics, and automation to photogrammetry, the science of mapping the earth's surface by aerial photography. Dr. Rosenberg is known to the osteopathic profession as the author or co-author of several JOURNAL articles dealing with the physics and engineering mechanics of the human spine. . . . Large scale screening of chemicals for possible use in the treatment of cancer is being carried out in several laboratories under the auspices of the Cancer Chemotherapy National Service Center of the United States Public Health Service National Cancer Institute. The laboratories are expected to test approximately 2,000 compounds in animal experiments before July 1. . . . Heparin, which has resisted all attempts at analysis since its discovery in 1916, has at last been broken down by the use of an obscure soil organism, according to Surgeon General Leonard A. Scheele of the United States Public Health Service. It is anticipated that this will eventually enable researchers in the field to analyze fully the heparin molecule, which in turn will permit studies to further our understanding of it and its uses.

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DOCTOR AND PATIENT AND THE LAW

The third edition of the medicolegal text, "Doctor and Patient and the Law" by Louis J. Regan has just been published by the C. V. Mosby Company of St. Louis. The first edition of this text was published in 1943. Through the years it has remained one of the most widely cited texts in the field of medical jurisprudence, and the author, now deceased, probably had the most outstanding reputation in the field of medical jurisprudence in the United States.

Many doctors of osteopathy will recall that Dr. Regan addressed the House of Delegates of the American Osteopathic Association in July, 1954, at Toronto, Canada, concerning the subject which was the area of his prime attention—the physician-patient relationship. Probably more than any other physician, Dr. Regan attempted to educate physicians as to the dangers that can accrue economically and legally to a physician from acts of negligence or purported negligence in the care of his patients.

The third edition of "Doctor and Patient and the Law" covers the subject matter of malpractice actions against physicians so broadly and deeply as to make detailed comment on the book almost impossible. The subject is considered from every aspect, with illustrations and comments concerning cases that actually have occurred. The legal citations are almost inexhaustible.

A malpractice prophylaxis program is proposed for the healing art professions in order to promote the best interests of both physicians and patients. It is noted that six times as many patients sued their doctors in 1935 as in 1921, and the incidence of legal action since 1935 has steadily increased. All the healing art professions are concerned over this rapid increase. Nonetheless, Dr. Regan points out on page 532 that the healing art practitioners themselves appear to be the inciting cause for a very high percentage of malpractice actions. He states:

> The precipitating cause of a majority of all malpractice actions is found in the unwise comments or criticism of physicians in regard to treatment given to patients by other physicians. Commonly it is criticism by a succeeding physician of the work of his predecessor on the case. Various authorities have estimated that 50 to 80 per cent of all the suits for malpractice would be eliminated if such destructive criticism could be stopped. It is profitless to attempt to determine why physicians are so prone to criticism destructively and unethically, but the results of it are deplorable. Legitimate criticism rests only on full knowledge of the facts as gathered from all the parties; from the physician who treated the patient, as well as from the patient.

If this statement is correct, and there are substantial grounds for believing that it is true, then the freedom of practitioners from legal action of an unsubstantial character will be reached only when the physicians themselves devote a sufficient amount of time and effort to understanding the nature and character of the legal action and legal requirements that are placed upon them in litigation.

Throughout the text Dr. Regan emphasizes that there will be few instances of injury resulting from the claims of misguided or malicious patients when practitioners understand fully how to govern and protect themselves under the law. In Chapter XV forms are furnished for the types of consents that should most frequently be procured by physicians from patients. Forms are also given for letters to patients who fail to keep appointments or where the patient discharges the physician from a case before the physician believes professional attendance should be terminated.

In Chapter XVI, a malpractice vulnerability self-test is presented which contains specific questions which a physician should ask himself in determining whether he is conforming to the general standards of care and responsibility required by law. It is suggested that the physician ask himself such questions as:

> Are the cases that I accept well within my professional qualifications to handle?
>
> Do I invariably obtain a complete x-ray record of every case presenting even a suspicion of bone or joint injury?
>
> Do I routinely make full use of all indicated laboratory aids in diagnosis and treatment?
>
> Do I hold inviolate all professional confidences?
>
> Am I sufficiently careful in the delegation of duties to assistants and employees?
>
> Do I keep abreast of developments in the profession?
>
> When did I last take a postgraduate course?
>
> Am I satisfied with the medical case records I keep in office and in hospital?

Many other questions well worth consideration and thought by

every physician are posed in this test.

This text is much more than a legal authority or source book for physicians. It contains not only legal authorities or citations of value to the lawyer, but also practical suggestions and programs for physicians to follow in their everyday practice. The physician who takes the time to read this text cannot help but feel more secure and certain in his physician-patient relationships because of the knowledge and experience that the reading would give him.

No one text can cover the legal phases of the physician-patient relationship completely, but this text comes closer to being a compendium upon the subject than any other text in the field of medical jurisprudence. It will remain a high standard for others to attempt to meet in the years ahead.

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S. 849

STATEMENT OF AMERICAN OSTEOPATHIC ASSOCIATION BY DR. C. D. SWOPE, CHAIRMAN, DEPARTMENT OF PUBLIC RELATIONS, AMERICAN OSTEOPATHIC ASSOCIATION, BEFORE THE SUBCOMMITTEE ON HEALTH AND SCIENCE HOUSE COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE WITH RESPECT TO S. 849

April 13, 1956

S. 849 expressly authorizes Federal grants to aid in the construction of non-Federal research facilities to schools of medicine, dentistry, and osteopathy, and other nonprofit institutions willing and competent to undertake needed research projects.

Inasmuch as there is an essential interrelationship between the research and teaching missions of schools providing basic and advanced training of physicians, dentists, and public health specialists, we urge expansion of the pending bill to include assistance for construction of training facilities, in substance as provided in H. R. 5940 as favorably reported by this Committee during the 81st Congress, also as recommended in the President's Health Message of January 26, 1956, translated in the form of H. R. 9013 and H. R. 9014 now pending before the Committee, which expressly authorize Federal grants-in-aid for construction of new or improved facilities for research or teaching to schools of medicine, osteopathy, public health, and dentistry, and other nonprofit institutions, and establish a National Advisory Council on Medical Research and Teaching Facilities to be selected in part "from among leaders in the fields of medical, osteopathic, dental, or public health research or education."

We share the hope expressed by the Chairman of this Subcommittee in his opening statement that this legislation as finally enacted will "stimulate contributions from private sources and from State and local governments for the construction of non-Federal research and training facilities."

The American Osteopathic Association allocates funds to the limit of its ability, some $60,000 annually in recent years, for research in osteopathic institutions. The chairman of the Bureau of Research of the American Osteopathic Association in his annual report of July, 1954, states: "One of the major problems in establishing research programs in osteopathic institutions is lack of space that can be assigned for this purpose. There is also the problem of accumulation of the basic equipment to convert such space, when found, into a research laboratory."

According to a tabulation made by the Department of Health, Education, and Welfare, based on research construction needs submitted by applicants to the National Institutes of Health, January, 1954, the osteopathic colleges require an average of 26,000 additional square feet per college for research facilities for which funds are not available. The tabulation, which was incorporated in the hearings on this bill before the Senate Committee, included research construction needs of medical, osteopathic, and dental colleges.

Testifying before the Subcommittee on Health and Science of the House Committee on Interstate and Foreign Commerce, with reference to the medical educational facilities bill, H. R. 4743, in connection with which he offered amendments which we reiterate, on June 17, 1955, Dr. J. S. Denslow, Director of Research Affairs, Kirksville College of Osteopathy and Surgery, and Secretary-Treasurer of the American Association of Osteopathic Colleges, pointed out that a survey of the demonstrable needs of the six osteopathic colleges for additional teaching space, conducted in November of 1954, showed needs in excess of 182,500 square feet for which funds were not available to proceed with the construction.

There are six colleges of osteopathy and surgery, all nonprofit, tax-exempt, and approved by the American Osteopathic Association, the Veterans Administration, and the Public Health Service.

Chicago College of Osteopathy, Chicago, Ill., established 1902.

College of Osteopathic Physicians and Surgeons, Los Angeles, Cal., established July 14, 1896.

Des Moines Still College of Osteopathy and Surgery, Des Moines, Iowa, established June 8, 1898.

Kansas City College of Osteopathy and Surgery, Kansas City, Mo., established 1916.

Kirksville College of Osteopathy and Surgery, Kirksville, Mo., established 1892.

Philadelphia College of Osteopathy, Philadelphia, Pa., established January 24, 1899.

In the Fall of 1955, 1,883 students were enrolled in the osteopathic colleges. The freshman class (520) received preprofessional training in colleges and universities in 40 States, Hawaii, and the District of Columbia.

These matriculants had preprofessional college training as follows: 75 per cent had baccalaureate or advanced degrees, and the remainder had 3 or 3-plus years. A minimum of 3 years of preprofessional training is required. The professional course is 4 years. There were 459 graduates in 1955. Most graduates take one or more years of intern training. Eighty-seven hospitals are approved for intern training by the American Osteopathic Association. Following internship, an increasing number take resident training available in 44 approved resident training hospitals in the specialties such as surgery, obstetrics, radiology, neuropsychiatry, and so forth. After resident training and upon further qualification and examination osteopathic graduates are certified by the respective American osteopathic specialty boards.

Boards of Specialty Certification include: American Osteopathic Board of Dermatology and Syphilology, American Osteopathic Board of Internal Medicine, American Osteopathic Board of Neurology and Psychiatry, American Osteopathic Board of Obstetrics and Gynecology, American Osteopathic Board of Ophthalmology and Otorhinolaryngology, American Osteopathic Board of Pathology, American Osteopathic Board of Pediatrics, American Osteopathic Board of Physical Medicine and Rehabilitation, American Osteopathic Board of Proctology, American Osteopathic Board of Radiology, and the American Osteopathic Board of Surgery.

The average tuition is $700 a year. The student in paying this yearly tuition of $700 is paying less than one-third of the actual cost of his education. The average osteopathic college spends approximately $2,400 per year per student in conducting the type of educational program which the profession has insisted upon.

The difference between undergraduate tuition and fees and the school budgets is made up as nearly as possible by indebtedness, hospital, clinic and graduate course fees, grants, such as cancer and heart teaching grants from the National Institutes of Health, and gifts. In 1943, a continuing Osteopathic Progress Fund (nonprofit tax-exempt) was established through

which the individual members of the profession and others make annual contributions to the colleges. These contributions total in excess of $5 million to date.

The cancer and heart teaching grants, which the osteopathic colleges receive from the National Cancer Institute and the National Heart Institute, help tremendously to emphasize the impact of cancer and heart disease and the methods of detecting and dealing with them, and also to kindle and channel the investigative interest of students who have aptitude for scientific research.

Stimulation of interest and discovery of aptitude for research need to be followed by training in scientific methods. Such training requires not only qualified supervision, but adequate laboratory space and equipment.

Research carried on at the osteopathic colleges has been made possible by research grants from the American Osteopathic Association, the Public Health Service, the Bureau of Naval Research, various trust funds, and individual contributions.

Participation in the program under the pending bill, expanded to include construction of training facilities, would greatly aid the osteopathic colleges to improve and extend their research and teaching facilities. We urge the enactment of the bill in terms permitting such participation.

Current Literature

INTRA-ARTICULAR AND PARAVERTEBRAL INJECTION OF CORTISONE IN OSTEOARTHRITIS OF SPINE

A study of the treatment of osteoarthritis of the spine with intra-articular and paravertebral injections of cortisone or hydrocortisone is reported by Abraham Cohen, M.D., and his associates in *The Journal of the American Medical Association*, December 31, 1955.

The authors treated osteoarthritis in 45 patients by injecting cortisone acetate or hydrocortisone acetate into or around the joints of the spine. In 26 patients, the cervical vertebrae were involved; in 13 the right or left sacroiliac joint; in 1 the sacroiliac joint bilaterally; in 2 the thoracic vertebrae; in 2 the lumbar vertebrae, and in 1 the thoracic and lumbar vertebrae. Treatment therefore involved 46 locations. In 37 instances cortisone was used and in 9 others hydrocortisone. A long 21-gauge needle was used and 12.5 mg. of cortisone or hydrocortisone in aqueous solution were injected into the upper area of the joint and the same amount into the lower end of the joint. The patients had had the disease for periods varying from 3 days to 15 years, but patients with long-standing disease were included in both groups. In all, one to twenty-three injections were given at intervals of 1 to 2 weeks. Slight relief was experienced by 12 patients, moderate relief by 12, and pronounced improvement by 16. The treatment produced no relief in 5 patients, and 1 patient felt worse after treatment than before. Whatever benefit was experienced usually occurred with the first, second, third, or fourth injection. If benefit had not been noted by then, it did not occur later. The effectiveness of cortisone and hydrocortisone was about equal.

In subsequent trials, the authors injected 25 mg. of prednisolone (Meticortilone) acetate by the same technic into 6 patients with cervical osteoarthritis and into 4 others with dorsal osteoarthritis. In all, forty-eight cervical and twenty-two dorsal injections were administered with no adverse effect. The intervals of injections were about the same and the percentage of results the same.

THE ETIOLOGY OF PREADOLESCENT KYPHOSIS

In tracing back kyphosis juvenilis (dorsal-wedging round-back deformity of the adolescent), Albert Barnett Ferguson, Jr., M.D., found that the persistence of the anterior vascular grooves in vertebral bodies of the thoracic region was a contributing factor. He suggests ways to prevent the deformity in his report in *The Journal of Bone and Joint Surgery*, January, 1956.

The anterior vascular grooves in vertebral bodies normally close between the ages of 7 and 10. A review of 153 roentgenograms taken in routine chest examinations among children 6 to 11 years old disclosed that of the 26 patients aged 6 to 7, 38 per cent had some remnant of an anterior vascular groove. Of 39 patients aged 7 to 8, 30 per cent had slight wedging of the fifth, sixth, and seventh thoracic vertebrae; the vertebral epiphyses had begun to ossify in 4.6 per cent of this age group. Anterior vascular grooves persisted in only 25 per cent of the 32 patients between 8 and 9 years of age, and wedging was noted in the same vertebrae; in 40 per cent early indentation of the anterior border of the vertebra was noted. Among the 35 children 9 to 10 years old, only 17 per cent had vestigial grooves; round-back deformity was noted in 1 child and wedging of the fifth, sixth, and seventh thoracic vertebrae was noted in 27 children; the anterior border was indented in 70 per cent and epiphyses were appearing in 14 per cent. Of 21 children aged 10 to 11, 19 per cent still had residual grooves, but none to any pronounced degree. The anterior vascular grooves which might be forerunners of round-back deformity persist in the midthoracic area. Sometimes wedging obliterates the grooves, but they persist in some cases after the age of 14.

The purpose of this study was to transfer attention in treating dorsal-wedging round-back deformity from the patient who is 16 years old or older to patients who are between 8 and 16 year of age, or even younger. It was believed that although anterior vascular grooves which persist are not the only cause of the deformity, they are responsible for weakness of the vertebral structure and will cause collapse under abnormal stress.

The simplest treatment consists of using a bed board; lying on flat, unyielding surfaces; discarding use of a pillow; taking postural exercises that will offset lumbar lordosis; stretching tight hamstrings; and eliminating habits of poor posture. A spinal flexion brace ending at the twelfth thoracic vertebra, fixed in position with the patient bending forward, will be helpful. A well-established deformity calls for more drastic measures, including wedging casts and spinal fusion.

SYMPOSIUM ON THE DIAGNOSIS OF THORACIC PAIN

Since thoracic pain is such a complex subject that most practitioners are unable to devote sufficient time to its thorough study, a symposium on the subject is presented in *Proceedings of the Staff Meetings of the Mayo Clinic*, January 11, 1956. In the introduction, Corrin H. Hodgson, M.D., points out the importance of the severity of the patient's pain and the frequency with which it is encountered. Further, he stresses correct diagnosis as most necessary for the ultimate pain relief.

In "Sensory Innervation of the Thorax and Thoracic Pain of Neural Origin," Kendall B. Corbin, M.D., describes the derivation of the sensory supply of the thoracic wall and the thoracic viscera and the neural causes of thoracic pain. Thoracic pain may be due to intrinsic lesions of the thoracic portion of the cord, irritation of the lateral spinothalamic tracts and thoracic dorsal roots, trauma to intercostal nerves from a rib fracture or other cause, and irritation of the lower cervical roots or cervical plexus. The symptoms of each are described.

"Thoracic Pain of Musculoskeletal Origin" is discussed by Mark B. Coventry, M.D. Common musculoskeletal causes of pain in the chest wall arising from the spinal column or spinal nerves are developmental defects, including epiphysitis and scoliosis; trauma, including fractures and dislocations and protrusions of a disk posteriorly and into the vertebral body; primary and metastatic tumors; rheumatoid spondylitis; infection; and degenerative diseases such as osteoarthritis and osteoporosis. The ribs, sternum, and costal cartilages are responsible for

thoracic pain because of trauma and other conditions, such as neoplasms and infections, affecting bones and joints. Muscle fatique and strain, collagen disease, and trichinosis are causes of the muscular and fascial pain in the chest wall; and the shoulder girdle can cause thoracic pain because of tendinitis, bursitis, and periarthritis of the shoulder; traumatic, infectious, and degenerative involvement of the sternoclavicular and acromioclavicular joints; and tumors involving the scapula, upper humerus, and clavicle.

The origins of "Thoracic Pain in Cardiovascular Disease" are reported on by Thomas J. Dry, M.D. Myocardial ischemia, pericardial irritation, and certain diseases of the aortic arch system can cause thoracic pain. The differential diagnosis of thoracic pain of cardiovascular origin and other types of thoracic pain is discussed, and the importance of a knowledge of pain patterns as manifested by individual diseases as a key to differentiation and the importance of skillful interrogation of the patient are pointed out.

"Thoracic Pain Arising from Esophagus, Mediastinum and Abdomen" is discussed by Howard A. Andersen, M.D. The burning type of pain of esophageal origin is usually due to esophagitis, and more severe squeezing pain is due to spastic muscular contraction. Esophageal hiatal hernia, diffuse spasm of the esophagus, irritable esophagus, cardiospasm, and tumors of the esophagus must be considered. Thoracic pain from mediastinal diseases is due to inflammatory swelling or distention of fascial spaces or because of spread of disease to boundary structures. Esophageal perforation, mediastinal emphysema, and mediastinal tumors may be causes. Abdominal conditions such as gastric or duodenal ulcer, gallbladder disease, pancreatitis, and lesions of the splenic flexure of the colon or splenic abnormalities may refer pain to the chest wall.

In "Thoracic Pain of Pleural, Pulmonary and Diaphragmatic Origin," Corrin H. Hodgson, M.D., stresses the absence of pain and that pain caused by pulmonary disease is more closely related to the method of production than to the type of lesion causing it. The four principal ways in which pulmonary lesions cause pain are by involvement of adjacent structures, in particular the chest wall, diaphragm, and parietal pleura; by involvement of tracheobronchial structures; by diffuse vascular spasm; and by displacement of thoracic viscera.

THE COMBINATION OF TWO DISEASES IN A SINGLE PATIENT

The possibility that two diseases coexist in the same person, particularly when the primary disease is essential hypertension, diabetes mellitus, or coronary arteriosclerosis, is discussed by Chauncey C. Maher, M.D., and his coworkers in *The Medical Clinics of North America,* January, 1956.

Dogmatic adherence to resolving observations by a single diagnosis in the three aforementioned chronic diseases, each with a course that is usually measured in years, can lead to errors of diagnosis as well as treatment when some acute or chronic disease, unrelated to the primary disease, occurs simultaneously in the same patient.

Once essential hypertension has been diagnosed, headaches, cardiac symptoms, thyrotoxicosis, asthma and hay fever, pulmonary embolus, uremia, cancer, and gastrointestinal diseases are often viewed casually, reducing the patient's chances of coping with the new disease which is superimposed on the old.

In the patient with diabetes mellitus, intracranial disease or injury may be the cause of coma. Skull fracture, cerebral embolism, brain tumor, uremia, acute alcoholism, barbiturate intoxication, meningitis, or encephalitis may be the cause. Pulmonary tuberculosis and acute infections of the skin, the respiratory system, the urinary tract, or the gastrointestinal tract may complicate the diabetes. Not all leg pains stem from diabetic neuritis; intermittent claudication or peripheral sclerosis may be the cause. Pathologic defects of the gastrointestinal tract occur in the diabetic as well as the nondiabetic patient, among them gastric ulcers, hiatal hernia, diverticula of the colon, and gastrointestinal cancer. The Kimmelstiel-Wilson syndrome also often complicates the course in diabetes, and hypertension or parenchymatous nephritis may well antedate the onset of diabetes.

In coronary arteriosclerosis and acute coronary obstruction with myocardial infarction, other forms of structural heart disease may be overlooked, among them disease of the aortic leaflets, the mitral valves, or residual rheumatic valvular defects. A variety of gastrointestinal symptoms may accompany myocardial infarction, and gallstones are commoner in patients with coronary arterial disease than they are in other people. Hiatal hernia often occurs in patients with coronary disease. Often anemia and angina pectoris coexist, and treatment of the first relieves the symptoms of the second. Psychotic and psychoneurotic manifestations occur also in patients with coronary disease.

Critical and studious evaluation of hypertension, diabetes, or coronary disease should disclose not only the fundamental disease but also any coexistent secondary diseases. The physician managing the illness must be familiar with the natural course of the primary disease in order to appreciate any distortion of the ordinary picture.

ESTROGEN GIVEN PARENTERALLY TO CONTROL EPISTAXIS AND HEMORRHAGE AFTER ADENOIDECTOMY

Preliminary Report

In rhinolaryngology epistaxis and hemorrhage after tonsillectomy and adenoidectomy are the two most common examples of spontaneous bleeding. Harold C. Menger, M.D., describes 16 such cases treated by means of estrogen administered parenterally and reports the results in *The Journal of the American Medical Association,* October 8, 1955.

Spontaneous hemorrhage refers to sudden, unexpected, pronounced bleeding from the surface of the bleeding area, wherever it may be. After adenoidectomy, spontaneous oozing can, as a rule, be controlled by packing. If this method fails, the author suggests administering estrogen parenterally.

In each of the 16 patients on whom the estrogen therapy was tried, the response was dramatic. Only in three instances, after estrogen was administered, did bleeding time exceed an hour. The responses were too consistent and too rapid to be explained by coincidental or automatic cessation of bleeding. The response mechanism has not been explained, but possibly the tendency of blood vessels to rupture is reduced or the estrogen acts beneficially on the clotting mechanism or stimulates the release of thrombocytes into the blood stream. Except for passing evidence that estrogen therapy may stimulate the release of thrombocytes, estrogen therapy remains empirical. It nevertheless contributes effectively to the control of spontaneous epistaxis and bleeding. The authors hope that further study will demonstrate the value of this therapy in controlling other types of spontaneous hemorrhage.

NAUSEA AND VOMITING OF PREGNANCY: PRELIMINARY TRIAL OF BONAMINE IN SIXTEEN PATIENTS

It is variously estimated that nausea and vomiting accompany 50 to 80 per cent of all pregnancies. The condition is dangerous in that it may become perniciously intense and may even lead to death. To solve this problem in patients who cannot be reassured and whom well-balanced diets or the administration of vitamin B_6 do not relieve, Howard M. Seidner, M.D., tested a new antihistamine compound—meclizine hydrochloride (Bonamine). The results of a clinical trial in 16 patients are reported in the *Illinois Medical Journal,* January, 1956.

Treatment began during the second or third month of pregnancy in all but one patient, who did not require it until the twenty-second week. One 25 mg. tablet was taken each day on arising. One patient required 1 tablet on arising and 1 at bedtime for relief. Relief was complete in all but one patient; in her vomiting was controlled, although she continued to feel nauseated. No adverse side effects were noted.

Book Reviews

FRACTURES AND JOINT INJURIES. Vol. 2. By Sir Reginald Watson-Jones, F.R.C.S., F.R.A.C.S. (Hon.), F.A.C.S. (Hon.), F.R.C.S.E. (Hon.), M.Ch.Orth., B.Sc., M.B., Ch.B., M.R.C.S., L.R.C.P.; Extra-Orthopædic Surgeon to Her Majesty The Queen; Orthopædic Surgeon to His Late Majesty King George VI; Director, Orthopædic and Accident Service, London Hospital; Senior Surgeon, Robert Jones and Agnes Hunt Orthopædic Hospital, Shropshire; Civilian Consultant in Orthopædic Surgery, Royal Air Force; British Editor, *Journal of Bone and Joint Surgery;* Chairman, Committee of Management, Institute of Basic Medical Sciences, Royal College of Surgeons of England and University of London; Medical Committee, National Advisory Council on Resettlement of the Disabled; Past President, British Orthopædic Association; Past Senior Vice-President, Royal College of Surgeons of England; Arthur Sims Commonwealth Professor of Surgery, Hunterian Professor, Bradshaw Lecturer and Robert Jones Lecturer, Royal College of Surgeons; Robert Jones Lecturer, New York; Hugh Owen Thomas Lecturer, University of Liverpool; John Burns Lecturer, University of Glasgow; Sommers Memorial Lecturer, University of Portland, Oregon, U.S.A.; Symes Orator, Royal Australasian College of Surgeons; Orator on Fractures, American College of Surgeons, San Francisco; Formerly Lecturer in Experimental Physiology, Lecturer in Orthopædic Pathology, Lecturer in Clinical Orthopædic Surgery, University of Liverpool; Honorary Lecturer in War Surgery, Postgraduate Medical School, University of London; Honorary Fellow of the Australian Orthopædic Association, New Zealand Orthopædic Association, American Orthopædic Association, American Academy of Orthopædic Surgeons, Massachusetts Medical Society, East African Association of Surgeons, Canadian Orthopædic Association, Société Francaise d'Orthopédie et Traumatologie, L'Academie de Chirurgie, Société Belge d'Orthopaedie et de Chirurgie de L'Appareil Moteur, Societa Italiana di Ortopedia e Traumatologia, Swiss Academy of Medical Sciences, La Sociedad Latino-Americana de Ortopedia y Traumatologia, Sociedade Brasileira de Orthopedia e Traumatologia, Societas Orthopaedica Scandinavica. Ed. 4. Cloth. Pp. 1073, with illustrations. Price $22.00. The Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2, 1955.

This is the second volume of the fourth edition of what appears to be a classic in its field. This volume deals with fractures and joint injuries involving the extremities and trunk. These are presented in a manner which is thorough, lucid, and readable.

It would perhaps be asking too much for the reader always to agree with the author as to what constitutes the procedure of choice in a given case. However, what is at least the next best thing is done here: the author's position is always made clear and his reasons for his position given in sufficient detail to make it understandable why he thinks as he does. This reviewer found no instances where the author has advocated what is generally agreed to be a poor procedure.

Certain basic tenets of practice held by the author appear repeatedly. An excellent example of this is his oft-repeated admonition, ". . . we have no internal fixation; we have only internal suture," applied to the tendency to place too much reliance on pins, nails, screws, or plates that are used to immobilize a fracture.

Attractive in its general appearance, the book is lavishly illustrated with excellent plates, many of them in color. An interesting and unusual feature is the use of the plates as teaching devices by placing a flap over one of two adjacent pictures and then asking the reader to make certain decisions before lifting the flap to see the picture and its caption. The writing in the text is always clear and interesting, with occasional flashes of wit where it is appropriate. Many of the captions for the illustrations are pungent as well as informative. In short, this is a pleasant book as well as one that is of great value to anyone doing work in the field of orthopedics.

CURRENT THERAPY 1956. Latest Approved Methods of Treatment For The Practicing Physician. Edited by Howard F. Conn, M.D. Cloth. Pp. 632. Price $11.00. W. B. Saunders Company, West Washington Square, Philadelphia 5, 1956.

The appearance of the new "Current Therapy" is a yearly event of no small moment to many people. Intentionally limited to discussions of treatment, with little or no consideration given to diagnosis or other phases of practice, it still is easily one of the most useful books in the physician's office.

With technics and procedures undergoing almost daily change in the swift pace of medical advancement today, it is a sad fact that except for a few old standbys therapy becomes old-fashioned overnight at times, to say nothing of what happens to it from year to year. And from time to time even some of the old standbys are forced to make way for new and better things. Under these circumstances of continuous change, almost amounting to revolution, it is not surprising that many so-called improvements are really fads, here today and gone tomorrow. It is much to the credit of the contributors and editors of this text that so little of the faddish finds its way into the book's pages, although the treatments described are thoroughly up to date and modern. Generally speaking, the writers have their feet solidly on the ground without being rooted to the spot.

The high standards set and met in previous editions continue to be in evidence in this volume. The format is attractive and makes the book easy to use. Indexing is comprehensive and completely adequate for the purpose. The appendices contain much useful information of the type that is not used too frequently but is wanted badly, and is often hard to find, when it is wanted.

PRACTITIONERS' CONFERENCES Held at The New York Hospital-Cornell Medical Center. Vol. 3. Edited by Claude E. Forkner, M.D., F.A.C.P., Professor of Clinical Medicine, Cornell University Medical College; Attending Physician, The New York Hospital; Consultant in Medicine (Hematology), Roosevelt Hospital. Cloth. Pp. 293. Price $6.75. Appleton-Century-Crofts, 35 West 32nd St., New York 1, 1956.

This book is one of a series intended to provide continuing education on a wide variety of subjects for the general practitioner. It is made up of published reports of conferences held at The New York Hospital-Cornell Medical Center.

The present volume presents conferences on such diverse subjects as Cancer of the Skin and Precancerous Lesions of the Skin and of the Oral Cavity, The Common Cold and Its Complications, Neurovascular Syndromes of the Shoulder Girdle, and Hay Fever. All of the subjects are handled well and in an interesting manner. The questions asked by doctors attending the conferences are noted, together with the answers given by the panel. This feature is of definite added interest, because some of the questions appearing here are quite certain to be questions that the reader would have liked to ask if he could have attended the conference.

It is obvious that this text is not intended as a reference; the diversity of subject matter without any common bond other than that they are problems commonly seen by general practitioners and the lack of an index for the book preclude such usage. However, when used as it is intended, that is, as a means by which the doctor can keep up to date and broaden his knowledge with relatively little effort, it is very good indeed.

COUNSELING IN MEDICAL GENETICS. By Sheldon C. Reed, Director, Dight Institute for Human Genetics, The University of Minnesota. Cloth. Pp. 268. Price $4.00. W. B. Saunders Company, West Washington Square, Philadelphia 5, 1955.

This is a small book of great potential importance to obstetricians, pediatricians, general practitioners, and, for that matter, any physician or surgeon who deals with family groups. Written by the director of the Dight Institute for Human Genetics, it sets forth the data on the subject that the practitioner is most likely to find useful, but makes no attempt to cover the subject of human genetics thoroughly. Except for a listing of rare conditions in the appendix, only those conditions that occur more often than once in 1,000 births are dealt with,

and these are discussed with at least as much detail as the doctor is likely to need in his practice.

Sooner or later every practitioner who deals with family groups will be confronted with a child who is obviously abnormal. And, sooner or later, most of the parents of such children will want to know how likely the misfortune is to recur with succeeding pregnancies. In addition, many potential parents who know that defective children have been born in their families will want to know what the odds are that it will happen to them. Inasmuch as most physicians are not well informed on the subject of genetics, the chance of being able to give an accurate answer without having recourse to a reference on the subject is very small indeed. To add to the difficulty, much of the reference material is difficult to find. Yet it is important that an accurate and authoritative answer be given to the parents, for, as the author points out as an example, the parents of a child who has fibrocystic disease of the pancreas have a right to know that their chances of having another such child are one in four for each child, not one in a million.

The writer is careful to avoid an authoritarian point of view in genetic counseling. It is his belief that the role of the counselor is to give accurate information; whether or not the parents wish to accept the risks as given is their own affair. Excellent and lucid discussions of the problems in genetics and the basic genetic laws are given as background material in the first few chapters. Following this, the most common abnormalities are treated individually. Congenital diseases form the bulk of the discussion, as might be expected, but there is also significant discussion of conditions such as tuberculosis and rheumatic fever, which are not congenital in the usual sense but to which there may be an inherited predisposition. There is an excellent chapter on the genetic influence of consanguinity of the parents and its relation to both rare and not so rare congenital afflictions.

The style of writing in the text is always interesting and frequently witty. The reader will gain a great deal of information from the book and at least as much enjoyment as information. Indeed, this reviewer found that once started it is a difficult book to put aside. Without writing down in the least, the author has succeeded in making his explanations lucid enough that they can be understood by an intelligent layman. In short, this book is both fascinating reading and an immensely helpful and practical reference on a subject of great importance.

CHLORPROMAZINE AND MENTAL HEALTH. Proceedings of the Symposium Held Under the Auspices of Smith, Kline & French Laboratories, June 6, 1955, Warwick Hotel, Philadelphia, Pennsylvania. Cloth. Pp. 200, with illustrations. Price $3.00. Lea & Febiger, Washington Square, Philadelphia 6, 1955.

This is a symposium on the new drug chlorpromazine, sponsored by Smith, Kline & French Laboratories, the drug house manufacturing it in this country. The papers included in the Symposium are: "The Effect of Chlorpromazine on Severe Mental and Emotional Disturbances," by Douglas Goldman, Clinical Director of Longview State Hospital (Ohio); "The Immediate and Long Range Effects of Chlorpromazine on the Mental Hospital" by Fritz A. Freyhan, Clinical Director of Delaware State Hospital; "The Effect of Chlorpromazine on Moderate and Mild Mental and Emotional Disturbances" by Paul H. Hoch, Principal Research Psychiatrist of the New York State Psychiatric Institute; and "Medical and Other Measures to be Taken to Keep the Discharged Patient from Returning to the Institution" by Herman C. B. Denber, Director of Psychiatric Research, Manhattan State Hospital (New York). As both formal and informal discussions which followed each paper are reported, the above authors are but a few of those participating in the Symposium.

Considering the wide useage of chlorpromazine by physicians in general practice this book should have wide appeal. It is the kind of presentation physicians like, that is, it deals with patients and actual clinical experiences.

THOMAS J. MEYERS, PH.D., D.O., F.A.C.N.

THE PLASMA PROTEINS IN PREGNANCY. A Clinical Interpretation. By Harold C. Mack, M.D., Chief, Department of Obstetrics and Gynecology, Harper Hospital; Associate Clinical Professor, Obstetrics and Gynecology, College of Medicine, Wayne University; Senior Consultant in Obstetrics and Gynecology, Herman Kiefer Hospital; Associate in Gynecology, Detroit Receiving Hospital, Detroit, Michigan. Paper. Pp. 118, with illustrations. Price $3.75. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1955.

This book simply and ably presents the patterns shown by the plasma proteins in the pregnant woman and the fetus. The material is largely new, and no great attempt is made to give it any intensely practical orientation. The author suggests that there is a relationship between nutrition and some of the problems of pregnancy, but specific treatment does not fall within the scope of the book. While the book may be of little interest to many busy practitioners, it should be helpful to anyone interested in problems to which the plasma protein patterns may be related.

REGIONAL ENTERITIS. Diagnostic and Therapeutic Considerations. By Frederick F. Boyce, M.D., Professor of Clinical Surgery, Tulane University of Louisiana School of Medicine, New Orleans, La. Cloth. Pp. 84, with illustrations. Price $2.35. J. B. Lippincott Company, East Washington Square, Philadelphia 5, 1955.

This brief monograph is intended to call the problem of regional enteritis to the attention of individual physicians and help them interpret their experiences with the condition in the light of what has previously been recorded about it. The author notes that the condition is of importance because of its increasing frequency and the diversity of phenomena associated with it. General considerations of diagnosis and therapy are presented rather than any detailed discussions of either. The book is well written, the illustrations are clearly reproduced, and the indexing is adequate.

HYPOTHERMIC ANESTHESIA. By Robert W. Virtue, M.D., Ph.D., Associate Professor and Head of Division of Anesthesiology, University of Colorado School of Medicine, Denver, Colorado. Paper. Pp. 62. Price $2.50. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1955.

There has been considerable interest manifested recently in the application of hypothermia to surgical patients, especially those undergoing intracardiac surgery.

This monograph on hypothermic anesthesia presents a survey of the present knowledge of the field, including the clinical application as utilized at the University of Colorado School of Medicine, where Dr. Virtue is Head of the Division of Anesthesiology. The technic has great promise, but the tediousness of the method and the personnel and equipment essential for the procedure limit its application to strictly indicated cases and to those few institutions having the necessary personnel and equipment.

For those anesthesiologists who are interested in keeping abreast of the advances in their specialty, this monograph will have merit.

A. A. GOLDEN, D.O.

DOCTOR AND PATIENT AND THE LAW. Louis J. Regan, M.D., LL.B., Member State Bar of California; Professor of Legal Medicine, College of Medical Evangelists; Clinical Professor of Forensic Medicine, School of Medicine, University of Southern California; Consulting Staff, Hollywood Presbyterian Hospital, Los Angeles, Methodist Hospital of Southern California, Los Angeles, Physicians and Surgeons Hospital, Glendale, California; and Member of the Staff, Los Angeles County Hospital, Los Angeles. Ed. 3. Cloth. Pp. 716. Price $12.50. The C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1956.

This book is reviewed in the columns of the Bureau of Public Education on Health in this issue of THE JOURNAL.